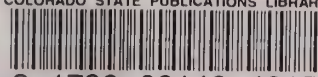


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Third Biennial Report  
OF THE  
State  
Highway Commission  
OF THE  
State of Colorado  
1914

T. J. EHRHART, Commissioner  
J. E. MALONEY, Secretary-Engineer  
ANNIE A. ROSS, Stenographer

ADVISORY BOARD

J. M. KUYKENDALL, Chairman  
District No. 1, Denver

LEONARD E. CURTIS  
District No. 2, Colorado Springs

CHAS. R. McLAIN  
District No. 3, Canon City

CHAS. E. HERR  
District No. 4, Durango

L. BOYD WALBRIDGE  
District No. 5, Meeker

To the Governor



Issued by order of the Commission  
November, 1914

DENVER, COLORADO  
THE SMITH-BROOKS PRINTING COMPANY, STATE PRINTERS  
1915



DOCUMENTS

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UNIVERSITY OF COLORADO



LOOKOUT MOUNTAIN, LOOKING OVER GOLDEN TOWARDS DENVER, FROM STATE PRIMARY ROAD NO. 21.

COMPLIMENTS OF

State Highway Commission



Third Biennial Report  
OF THE  
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BRIDGE OVER EAGLE RIVER, EAGLE COUNTY—STATE PRIMARY ROAD NO. 10.

LETTER OF TRANSMITTAL

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Denver, Colo., December 1, 1914.

TO THE HONORABLE  
THE GOVERNOR AND THE LEGISLATURE  
OF THE STATE OF COLORADO.

In compliance with Section 12, Chapter 88 of the Session Laws of 1913 (House Bill No. 254), we have the honor to submit herewith the biennial report of the State Highway Commission for the period April 7, 1913 to November 30, 1914 inclusive.

T. J. EHRHART,

State Highway Commissioner.

(SEAL)

J. M. KUYKENDALL,

Chairman State Highway Commission.

LEONARD E. CURTIS,

CHARLES R. McLAIN,

CHARLES E. HERR,

L. BOYD WALBRIDGE,

Members of Advisory Board.

Attest:

JAMES E. MALONEY,

Secretary-Engineer.



Third Biennial Report

OF THE

State Highway Commission

OF THE

State of Colorado

1914

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BILL ESTABLISHING COMMISSION

The bill establishing the present Highway Commission was passed and signed by Governor E. M. Ammons March 17, 1913.

APPOINTMENT AND ORGANIZATION OF COMMISSION

The Governor appointed Mr. T. J. Ehrhart State Highway Commissioner on March 25, 1913, and appointed the following gentlemen as members of the Advisory Board on April 1, 1913.

John M. Knykendall, from District No. 1.

Leonard E. Curtis, from District No. 2,

Chas. R. McLain, from District No. 3,

Charles E. Herr, from District No. 4.

L. Boyd Walbridge, from District No. 5.

A meeting of the Commission was held on April 7, 1913, at the office of the State Highway Commissioner, at the Capitol Building.

The Commission organized on this date, electing John M. Knykendall, Chairman; J. E. Maloney, Secretary-Engineer; and Annie A. Ross, Stenographer.

MEETINGS

The Advisory Board held thirteen meetings, both regular and special, during the years 1913 and 1914, at the office of the State Highway Commissioner in the State Capitol.

MILEAGE OF ROADS

The total mileage of roads designated as State Roads (Primary and Secondary) to date is 5,842.45.

Total road mileage of State: In this State there are 30,733 miles of road of all classes, State and County.

## APPORTIONMENTS

Before making any apportionments the Commission consulted with Mr. Bonck, Deputy Attorney General, and also with the State Treasurer and State Auditor.

Apportionments were made at the several meetings for 1913, as follows, by Advisory Board Districts.

District No. 1.	\$122,360 00
District No. 2.	98,700 00
District No. 3.	98,550 00
District No. 4.	170,000 00
District No. 5.	94,650 00

and for 1914, as follows:

District No. 1.	\$ 52,600 00
District No. 2.	44,500 00
District No. 3.	34,000 00
District No. 4.	56,145 25
District No. 5.	34,900 00

making a *total* for the years 1913 and 1914, as follows:

District No. 1.	\$174,900 00
District No. 2.	143,200 00
District No. 3.	132,550 00
District No. 4.	226,145 25
District No. 5.	129,550 00

A total of \$806,345.25 as State aid for these two seasons. To avail themselves of these apportionments the counties provided for raising, by taxation or otherwise, the following sums, (by Advisory Board districts).

	Dist. No. 1	Dist. No. 2	Dist. No. 3	Dist. No. 4	Dist. No. 5
1913	\$102,140 00	\$ 58,250 00	\$ 87,250 00	\$114,700 00	\$ 75,200 00
1914	34,300 00	29,500 00	23,333 33	24,500 00	24,066 67
Total	\$136,450 00	\$ 87,750 00	\$110,883 33	\$139,200 00	\$ 99,266 67

A total for all counties of \$573,550. This represents only the amount the counties pledged to meet the State Fund, but they have in many cases expended much more than this amount. This makes a total for State and Counties for the State roads of—\$1,379,895.25—appropriated during 1913 and 1914.

Of this amount there remained unexpended on Nov. 30, 1914—

State Fund. . . . .	\$ 73,082 86
County Fund. . . . .	47,725 30
	\$120,808 16

The total actually expended for the two years 1913 and 1914, was \$1,999,549.96.

The expenditures for salaries, traveling expenses, office fixtures and supplies for the biennial period were—

1913 . . . . .	\$13,755 07*
1914 . . . . .	15,422 77*
Total . . . . .	\$29,177 84

This amount being 1.5% of the total fund expended, or 4% of the State expenditure.

Inspection trips were made by the Members of the Board, the Commissioner, Engineer or Supervisor, to the work in nearly every county in the State. In many cases several trips were made to some of the counties. We were unable to go to a few of the eastern counties on account of lack of time.

#### MILEAGE TRAVELED ON INSPECTION TRIPS

In view of the necessity of going over the roads of the State, the Commission, with the consent of the Auditing Board, purchased an automobile for the department's use, at a cost of \$2,401.85.

In the past two seasons 17,000 miles have been covered in the machine at an average cost of 8.9c per mile traveled. This cost includes all expenses of maintenance, gasoline and repairs for the two seasons. As there were from one to four persons on these trips, the cost would run about 3c per mile per person. This is the same as the average railroad mileage, and has saved the livery bills which would otherwise be necessary in going over the roads, as well as a great deal of time.

In addition, the Commissioner, Engineer and Supervisors have traveled 46,000 miles by railroad in covering the work on the State roads.

#### CAMPING SITES

Letters were addressed to the various cities and towns of the State, suggesting that some suitable place be designated as

\* Included in these amounts are expenditures to the total amount of \$1,728.44 for the season of 1911 and 1912.



a camping ground for those tourists who desired to avail themselves of the privileges.

The following cities and towns have answered, and designated a site for campers use:

Holyoke, Brush, Fort Morgan, Greeley, Castle Rock, Colorado Springs, Cheyenne Wells, Pueblo, Alamosa, Salida, Steamboat Springs, Rifle, Montrose, Ouray, Lake City, Creede, Pagosa Springs and Cortez.

#### ADVERTISING SIGNS

The question of advertising signs on the State Roads was taken up with the Boards of County Commissioners throughout the State, and they were urged to see that the law in regard to signs on Public Highways was observed.

#### STANDARD SECTIONS FOR ROADS, BRIDGES AND CULVERTS

Bulletins Nos. 3 and 4 containing rules and standard sections were sent to all the County Commissioners, and to the Road Overseers of the several counties of the State, so that all their work would conform to the general standard adopted.

#### ROAD ACCOUNTS

It is essential that the counties keep their road accounts as nearly uniform as is possible, and a form for County Road Overseers was printed in Bulletin No. 4 as a suggestion, with that end in view. This is a very important matter, as many of the counties are unable to tell where their road fund was expended, or to separate the cost of grading and dragging from the cost of bridges and culverts.

#### GENERAL ROAD MAPS

Road maps have been received from all the counties; most of these are good county maps. There are a few, however, which this office will have to make over.

#### DETAIL MAPS AND PROFILES

Alignment maps and profiles have been received of many of the State Primary roads. These maps give detail section, and the profiles show the grades, bridges, etc. It is intended to get this detail information for every State Road in each county.

#### PLANS EXAMINED AND CONTRACTS APPROVED

Plans were examined, specifications and contracts approved for the following counties during the past two years.

Adams, Alamosa, Archuleta, Arapahoe, Bent, Boulder, Crowley, Douglas, Dolores, Eagle, El Paso, Fremont, Garfield, Grand, Gunnison, Huerfano, Jackson, Jefferson, Lake, La Plata, Larimer, Las Animas, Logan, Mesa, Moffat, Morgan, Park, Pitkin, Pueblo, Prowers, Rio Blanco, San Juan, Sedgwick, San Miguel—35 counties, or a total of 99 contracts for grading, bridges and culverts, in 35 counties.



## TRAFFIC CENSUS REPORTS

The response to letters sent to the counties and towns, asking for a census of the traffic on the roads leading into the main cities and towns, has not been as good as desired. Answers and some records were received from—

Longmont, Pueblo, Grand Junction, Durango, Littleton, Leadville, Montrose, and the Blue Mesa road. This line of inquiry will be continued.

## ENGINEERING AND INSPECTION

Plans and specifications and contracts have been prepared in this office for bridges and culverts for—Adams, Arapahoe, Douglas, El Paso, Pueblo, Garfield, Lincoln, Park, Morgan, Elbert, Boulder, Kit Carson counties; and plans for bridges and culverts were examined, checked over and changed, or approved for—Larimer, Logan, Sedgwick, Archuleta, La Plata, Rio Blanco, Mesa, Boulder, Gunnison, Rio Grande, Las Animas, and Fremont. Surveys, profiles, contracts and specifications were prepared for grading work in Pitkin County; in Archuleta, Conejos, Rio Grande and Mineral counties for the Elwood Pass road; in Douglas, Adams and Rio Blanco counties; and for surfacing with gravel in Adams, Douglas and Boulder counties.

Surveys, profiles, contracts and specifications were examined and changed or approved for—Jefferson, Arapahoe, Elbert, Douglas, Bent, Prowers, Baca, Lake, Eagle, Garfield, Grand and La Plata counties.

General specifications were prepared; also standard plans for culverts, and small bridges, and standard road sections; these were issued as Bulletins Nos. 3 and 4.

Foundations for bridges were examined, and lines of survey for new roads or suggested changes were gone over with the county officials.

## OFFICE WORK

During the past two years, the accounts with the 63 counties have been kept, 900 vouchers being issued in payment for county expenditures; county statements checked, resolutions of apportionment and notices sent to each county; letters of inquiry or request answered; minutes of meetings were recorded and sent out; annual report blanks were sent to each county each year; letters and catalogues filed; minutes of road builders convention recorded and sent out.

In keeping our accounts with the counties, we adopted the system in use after conferences with the Deputy State Auditor.

## WIDTH OF WAGON TIRES

The destructive effect of heavy loads on narrow tires is a serious factor in the upkeep of our roads, and any method leading to the adoption of a law for a maximum load per inch of tire,

say not to exceed 500 lbs. would result in a large saving in maintenance. Attention is called to the tables appended, which will give an idea of the great loads on the road from narrow tires.

#### SUMMARY OF WORK ACCOMPLISHED 1913 AND 1914

In Advisory Board District No. 1, 942.75 miles of road graded, 55 miles of road surfaced, 49 bridges of all sizes constructed, and 248 culverts of all sizes.

In Advisory Board District No. 2, 1024.9 miles of road graded, 191½ miles surfaced, 48 bridges built, 414 culverts placed.

In Advisory Board District No. 3, 581.6 miles of road graded, 70¼ miles surfaced, 40 bridges built, 327 culverts placed.

In Advisory Board District No. 4, 1,226½ miles of road graded, 16 1/6 miles surfaced, 80 bridges built, 668 culverts placed.

In Advisory Board District No. 5, 1,038.65 miles of road graded, 47½ miles surfaced, 39 bridges built, 462 culverts placed.

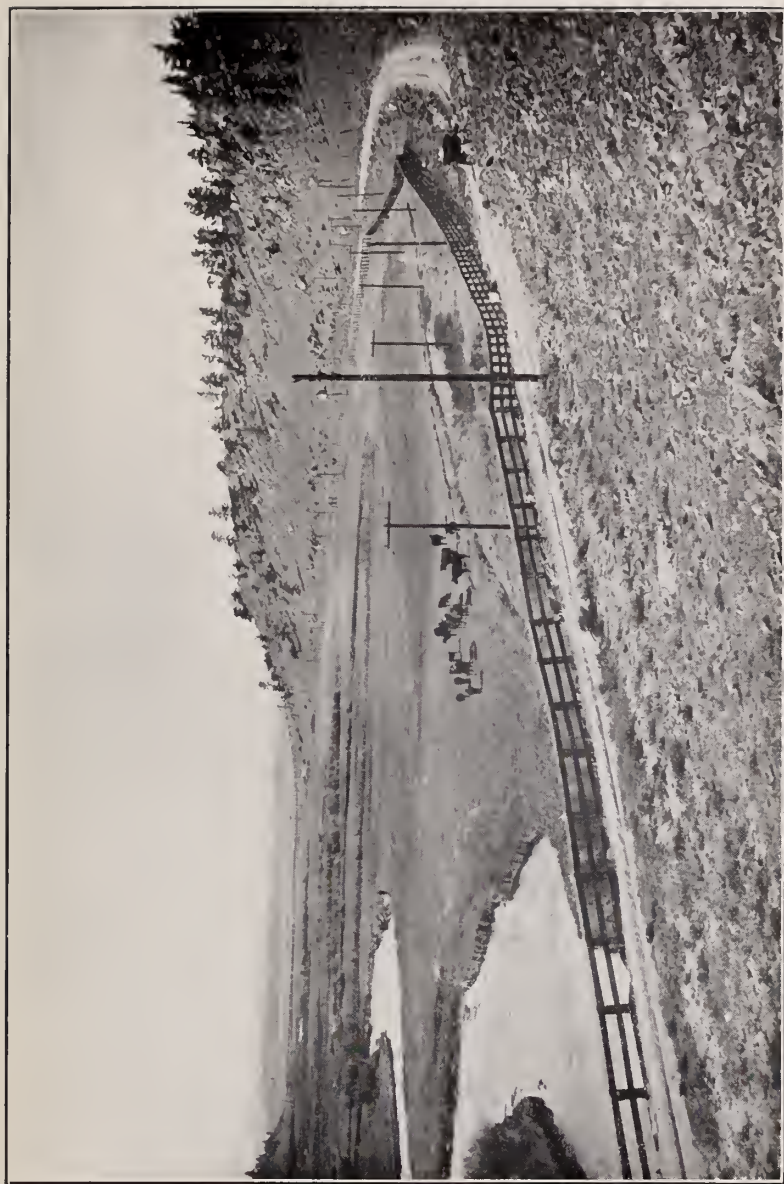
Making a total of 5,014 miles of road worked upon and graded for the State, at an average cost of about \$258.00 per mile. This work means the crowning, ditching, and bringing of the road to a moderate grade, including heavy cuts in many places, and a great deal of rock work in the mountain sections. The ruling grade is 6%. There has been 380.4 miles of State road surfaced with gravel, or sand-clay, most of it with gravel, at an average cost of \$350.00 per mile, not including the grading, bridges or culverts. There has been 306 bridges built and repaired, of all sizes, from 6 ft. to one 540 ft. in length, across the Arkansas River, at an average cost of \$1,300 per bridge. There has been 2,114 culverts of all sizes placed, from an 8 inch pipe to a 6 ft. culvert, at an average cost of \$45.00 per culvert.

The work on the main roads across the State may be briefly outlined as follows:

On the great North and South Highway running from Cheyenne to Raton, N. Mexico, work has been in progress in every county along the line. This road is now graded for nearly the entire distance in the State of Colorado. A short stretch of this road remains to be graded in the following counties: Larimer, near the north line of the county; a few miles in Pueblo, and some in Huerfano and Las Animas counties. This road has been graveled in Larimer, Boulder, Adams, Arapahoe, Douglas, El Paso, Pueblo and Las Animas counties. Work was in progress this year in all these counties.

The road between Denver and Colorado Springs has been placed in excellent condition, with the exception of a few miles between Littleton and Sedalia, which are now being improved.

The road between Denver and Greeley has been surfaced and graded in Adams and Weld counties; also the Platte Valley road,



HARTZEL-BUENA VISTA ROAD, PARK COUNTY—STATE PRIMARY ROAD NO. 18.



running from Greeley thru Weld, Morgan, Logan and Sedgwick counties. Work has been in progress in each of these counties this year on this road.

The connecting roads from the east to Denver, Colorado Springs and Pueblo have all been improved during the season.

Work has been in progress in Larimer County on the Fall River and Poudre roads; these roads lead over the divide into Grand County, and when completed will form one of the grandest scenic drives in the United States. The Berthoud Pass road has been placed in excellent condition, and considerable work has been done in Clear Creek and Grand counties. Work has also been in progress on the Rabbit Ear Pass road in Grand, Jackson and Routt counties. This road is now open to travel, so that a direct route is open from Steamboat Springs to Denver. The extension of this road to Vernal, Utah, has had considerable work done upon it this year. This road is now open between Steamboat and Vernal. The connecting road from Meeker to Rifle is being improved.

In the Grand River Valley the road from Glenwood Springs to Debeque has had a good deal of work done upon it, and in Mesa County the road between Grand Junction and the Utah line has been improved; also the road between Grand Junction and Delta.

The Tennessee Pass road has been placed in excellent condition on the eastern side in Lake and Chaffee counties; the heavy grades being removed and the road graded and surfaced.

Monarch Pass road has been improved by the cutting down of the grades and widening of the roadbed in Chaffee and Gunnison counties, and this road has been extended over the Blue Mesa to Montrose, and was opened to traffic this last year. The road has also been opened up over the Black Mesa to Delta.

The road from Salida by way of Poncha Pass to the San Luis Valley has been widened and improved in Chaffee and Saguache counties. This road is the main road to the north from Alamosa.

From the San Luis Valley the road over the Cochetopa Pass to Gunnison county is now being improved.

From Walsenburg to Alamosa the road over La Veta Pass has been improved in Costilla and Huerfano counties, and is now in good travelable condition. From Alamosa south to the New Mexico line the State road has been graded and surfaced in part during the past year.

The road up the Rio Grande from Alamosa to Creede has been widened, shifted in location in one or two places, and greatly improved during the past season.

On the east side of Elwood Pass the Alamosa River road by way of Jasper and Stunner was worked during the past season by the counties and State; and from Alamosa to the top of the Pass. This was designed to be part of the main connection from the San Luis Valley to the San Juan district.



On the western side of this divide the road from Pagosa Springs to the divide was surveyed and work is now in progress on this side of the range.

Archuleta and La Plata counties have made a splendid road from Pagosa Springs to Durango, and Montezuma has continued the road to the Utah line. Some work was done on the road between Silverton and Durango, about two miles of the heaviest rock work being done on the Silverton end, and between Silverton and Ouray the road in San Juan county has been put in excellent condition to the top of Red Mountain, some work being also done on the Ouray county side.

Considerable work was done in San Miguel and Dolores counties on the road leading from Ridgway to the Montezuma and Paradox Valleys.

Montrose county has done a great amount of road work during the past two seasons, opening up the Blue Mesa route, and also the north and south road to Delta, and to Ouray; also starting on the road from Montrose west to the Paradox Valley.

In Pitkin county, work has been in progress on the road over Independence Pass, which will make a short connecting link between the Arkansas River Valley and Glenwood Springs. The heaviest portion of this work is now completed on the west side.

In Summit and Park counties work has been in progress on the road over Hoosier Pass—the Park county side being completed.

In conjunction with the Mountain Park Commission of Denver, and the County Commissioners of Jefferson county, the north Golden road and the road up Lookout Mountain and over Genesee Park, was completed during this past season, and work is now in progress upon the main road to Morrison.

#### CONVICT WORK

Practically all of the work of the convict road crews has been upon State Highways during the past two years. There were six camps at work in the following counties: Larimer, Weld, Boulder, Pueblo, Garfield, and Fremont.

These six camps have had from 200 to 250 men at work during the past two years: the average number employed varying from 30 to 40 for each camp.

In Larimer county the men have been at work on the Fall River road above Estes Park, and are now at work on the Poudre Canon Highway.

In Weld County, the men have worked on the Platte River road from the Morgan county line to Greeley. This piece of work is nearly finished.

In Boulder county the work is on the Boulder Canon road between Boulder and Nederland.

In Fremont county work is being continued on the road along the Arkansas River, between Parkdale and Texas Creek. There remains about five miles of this road to connect.

The Pueblo county camp has worked on the Pueblo Fowler, the Pueblo-Beulah, and the Colorado Springs roads. The Fowler and Colorado Springs roads are finished, and work is now being completed on the Beulah road.

In Garfield county the work has been on the Glenwood Springs-Rifle road; the road is nearly complete from Glenwood to Newcastle, and work is now in progress on some heavy grades and hills below Newcastle.

In Mesa county the convict camp completed a portion of the work up Plateau Creek during 1913.

The work accomplished has been of a satisfactory character, and the continuation of these camps is hoped for. However, we are of the opinion that these camps should be kept to a minimum force in all cases, of at least 35 or 40 men, as the overhead charges are about the same for large and small camps.

#### STATE ROAD FUND

When admitted to the Union, by Constitutional grant, Colorado was given 500,000 acres of land, the proceeds of which were to be devoted to Internal Improvements. These lands were selected and located in fifteen counties; about 325,000 acres have been sold; there remain 175,000 acres.

Up to two years ago the income and receipts from this source was divided and parceled out about the State by special legislative acts. There was in this manner distributed about \$1,250,000. The State Highway Commission has allotted among the sixty-two counties, outside of Denver County, in round figures, \$800,000 in the past two years. This sum represents the income to 1914, or about \$133,000 per annum, including \$76,060 from the automobile license for 1913 and 1914.

Our resources for 1915 will be about \$120,000. This will not be sufficient to enable us to complete the main projects which have been started during the past two seasons, and we will be able to extend State aid to but a few counties in the State. As there is some \$265,000 due the road fund from the Capitol Building Fund, we urge that it be made available for 1915 so that the road work may be continued.

#### WORK PLANNED FOR 1915 AND 1916

Along the lines laid down in the past by the Commission we hope to be able to complete the following projects:

1st: Complete grading and graveling of the great North and South Highway.

2nd: The completion of the road from the San Luis Valley into Durango and the San Juan district, with a connection to the southeast from Pagosa Springs. This is known as the Ellwood Pass road.

3rd: Also the completion of the road from Durango to Silverton and from Silverton to Ouray.

4th: A connection from Dolores to Rico and by way of Placerville to Montrose.

5th: The completion of the road from Creede to Lake City, connecting with the Blue Mesa road at Sapiuero; also with the Black Mesa road.

6th: Completion of the road from Fall River and the Poudre to Grand Lake.

7th: The further improvement of the Platte Valley road from the Nebraska line to Greeley and Denver.

8th: The completion of the improvements on the line of the Midland Trail, from the Kansas line to Denver and Colorado Springs.

9th: The completion of the improvements on the Santa Fe Trail from the Kansas line to Pueblo.

10th: The completion of the work along the Arkansas River to Salida from Canon City.

11th: The completion of the work over Independence Pass to Twin Lakes, and the further improvement of the road thru Lake County and Chaffee county.

12th: The further improvement of the road down the Eagle River from the top of the Tennessee Pass to Glenwood Springs, and the completion of the improvement on the line to Grand Junction, and to the west line of the State.

13th: The completion of the work from Rifle to Meeker and Craig, and from Craig west to the Utah line; also between Craig and Steamboat Springs.

14th: The further improvement of the road from Steamboat Springs to Walden in Jackson county, and from Walden south to the Grand county line, and also the completion of the Rabbit Ear Range road, and of the road from Steamboat Springs to Wolcott.

15th: The further improvement of the road from La Junta to Trinidad, and from Trinidad to the southeast.

16th: The completion of the work on the Black Mesa road from Sapiuero to Delta.

In general, it is desired to continue the improvements already begun on the State Highways, replacing wooden and light structures with more permanent construction, grading and draining the roads, so that all the 5,840 miles of State Highways which traverse every valley and connect every county seat and important town in the State, will be crowned, ditched, have permanent culverts and bridges, and be on reasonable grades, and surfaced, so that people can travel them in all kinds of weather with comfort and safety.

These roads should be first completed before attempting the rebuilding of ordinary county roads. It is better that we build ten miles well, than repair temporarily twenty miles. It is an urgent necessity that all roads be improved, but it is a physical and financial impossibility to accomplish all this at once. We must begin somewhere on some systematized plan. We think the



system we have laid out will be of the greatest benefit to the greatest number, and that it should be built first; then will follow rapidly the development of our tributary system.

Colorado's interests are mutual. Any development in the State, no matter where, will help the whole. The mountain sections are attractive to our own people, and much more so to the inhabitants of the East and lower altitudes. We have 56,000 square miles of mountain territory, pure air and water, a climate cool and pleasant during the Summer months, and the most beautiful, grand, and attractive scenery in the world. It is our greatest undeveloped resource.

#### FUTURE DEVELOPMENT

In 1916 the half mill levy voted becomes available, and the Commission will have funds to push these projects to completion.

The policy of the State Highway Commission in relation to this half mill levy fund is explained by the following resolution.

"Resolved, That if the bill providing for the half mill levy is approved by the people of the State at the coming election, it will be the policy of this Commission to expend upon the State roads in each county of the State, excepting the City and County of Denver, the amount collected from the half mill levy, in each county. To expend the amount collected from such levy from the City and County of Denver, upon the principal State Highways leading to Denver, and in which the City and County of Denver is most directly interested; and to expend the balance of the said fund, consisting of contributions from the Internal Improvement Fund, the State tax on automobiles, and otherwise, in improving the State Highways in counties which are not financially able to bear the necessary expenses of improving the same." (Adopted by the State Highway Commission September 26, 1914.)

The State system will be gradually extended in each county as the present roads are improved, bringing the main connecting roads into the State system, and so providing for laterals, reaching in every direction from the main State line. It is expected that the ultimate development will include about 16,000 miles of State road, or over 50% of the total mileage in the State. As these roads are improved the proper maintenance becomes of the greatest importance, and it is to be expected that the maintenance of 16,000 miles of road will cost about \$640,000 a year; an average of \$40.00 per mile per year. It will be seen that as the State system is improved each year, thus putting an increased mileage under maintenance and leaving a gradually decreasing amount in the construction fund, that it will be necessary to have the cooperation of the counties in the maintenance of State Highways in order that further development may be continued in the future.

To appreciate the importance of the work of the State Highway Commission the development of one of the great resources of

Colorado—automobile tourist travel must be considered. This is already important, but in five years I am confident that at least \$20,000,000 will be distributed in the business channels of Colorado annually, resulting in increased markets for our products, and business activity in all channels.

#### RECOMMENDATIONS

The present Highway Law has thus far proven very satisfactory in its operation. The County Commissioners of the State have acted in harmony with the State Highway Commission, to the end that splendid and satisfactory results have followed, with every prospect of much improvement in the future.

I am not in favor at this time of radical legislative action, but recommend that in order to increase the efficiency of the State Highway Department that the annual continuing appropriation be increased to \$20,500, enabling us to employ one additional Engineer, and one more field supervisor. That as fast as the State Highways are completely graded and drained, the cost of properly maintaining them should be borne equally by the State and County; the best method to be agreed upon by the County Commissioners and the Highway Commission. Said maintenance to be under the supervision of the State Highway Commission or its representatives; and also that the State Highway Commission be given the power to condemn rights of way on State Highways. I believe this is all that should be undertaken at this time. Two years more will develop more clearly future necessities in relation to improvement of the present law.

It is important that the county records of the expenditures upon the State and County roads be kept so that each item of cost upon each piece of work can be obtained.

A detailed statement of the work of the department is submitted herewith.

Respectfully submitted,

T. J. EHRLHART,

State Highway Commissioner.



REINFORCED CONCRETE ARCH BRIDGE AT LA JUNTA, OVER  
ARKANSAS RIVER—STATE PRIMARY ROAD NO. 6.



REINFORCED CONCRETE BRIDGE AT LA JUNTA, OVER ARKANSAS  
RIVER—STATE PRIMARY ROAD NO. 6.



Denver, Colo., December 1, 1914.

HONORABLE T. J. EHRHART,

State Highway Commissioner,

Denver, Colo.

Dear Sir: The accompanying tables show in detail the apportionments by the State and Counties and the amount actually expended during 1913 and 1914; also giving the detail of the expenses of the department for the biennial period.

The county valuations are from the report of the State Tax Commission, while the county road levy and expenditures on county roads are from the county reports. Where no report was sent in last year's figures were used, and noted as approximate.

#### TRAFFIC CENSUS

The data on the traffic over the State roads is not as complete as desired, but is included so as to serve as a basis for more complete observation in the future. Data on this subject is important, and, we expect to obtain more complete returns through the cooperation of the commercial organizations of the State.

#### TESTS OF ROAD MATERIAL

The matter of the testing of road material is also important, and I suggest that the counties, cities and towns be urged to take advantage of the offer of the University of Colorado and send samples of material available for road surfacing to be tested.

#### WIDE TIRES

Data, experiments and expression of opinions by various authorities are included in the notes on this subject appended hereto. Recognizing the difficulty of arbitrary legislation on this subject, it was thought the placing of this data in accessible form might be useful in the drafting of any legislative acts on this subject. The width of tire is an important factor in the maintenance of our roads, and the use of wide tires should be encouraged in every way possible.

#### BRIDGES

Great improvement has been shown in the State in the character of the bridges and culverts built, but there are still many counties where the bridges are constructed of material too light and unsuited to the loads they have to carry. In many cases of bridge failure, the cause has been faulty foundations; in fact 90% of the failures have been owing to this cause.

The practice of many counties in accepting the plan which appears to them the cheapest, without any check by an Engineer, is a bad practice, and is not really economical in the end. All

bridge plans should be gone over by an Engineer and checked before being adopted by any county. On all State Highways I wish to suggest that no State moneys be paid for any structure that has not been submitted to this office for approval *before being contracted for and built*.

In the matter of foundations, the data supplied, as a general rule, has been insufficient as to the character of the foundation material, being based, as a rule, upon hearsay or superficial examinations. Every proposed site should be thoroughly examined, and sufficient borings made to be reasonably certain of the underlying material, and the depth to bed rock, and these investigations should be made by some one experienced in these matters.

#### SURVEYS AND MAPS

While we have received and have filed surveys and profiles of many of our State Roads, there are still a great many miles which are not surveyed.

I respectfully suggest that the counties be urged to have their surveys of all the State Roads completed, according to the Rules and Regulations of the department, and that when new work is to be undertaken that the surveys and plans be made before the work is started, instead of after completion, as has been done in some cases.

Under the law, the making of all surveys is in the hands of the County Commissioners, and should be made and submitted to this department, so that an intelligent idea of the proposed work would be at hand, and this should apply whether the work is done by County forces or by contract.

#### RECORDS OF COST ON ROADS AND BRIDGES

Great difficulty has been experienced in obtaining from the counties accurate statements of the moneys expended upon state and county roads, bridges and culverts. Some counties seem unable to give anything but the total amount expended during the year, and one county did not send in even the total amount spent upon county roads.

Methods for obtaining the detailed costs have been suggested by this Commission to the County Commissioners of the State, and copies of the bulletin sent to every Commissioner, Clerk and Overseer in the State. The County Commissioners have the authority to insist upon the Road Overseers turning in definite information on their bills and reports, as to where the labor and material was used, and what each piece of work cost, and they can and should refuse to pay any bill, or accept any report which does not contain this information.

On the state roads, I suggest that the County Commissioners be required to have their expenditures recorded along the lines laid down for our annual reports. If the records are kept for





LOOKOUT MOUNTAIN ROAD, JEFFERSON COUNTY, MOUNTAIN  
PARK COMMISSION OF DENVER, CLEAR CREEK SIDE—  
STATE PRIMARY ROAD NO. 21.



LOOKOUT MOUNTAIN ROAD, SHOWING HAIRPIN CURVES TOWARD  
TOP (MAXIMUM GRADE 6 PER CENT)—STATE PRIMARY ROAD NO. 21.





the state roads they will be extended to the county roads, and the Commissioners will have a clearer idea of the cost of each piece of work.

#### GENERAL

The work of the past two years has included the inspection of the proposed improvements in various parts of the State. Considerable time was spent on the line connecting the San Juan section with the San Luis Valley, and in the selection of the Wolf Creek line for this highway, I believe we have the best route over the range for that locality. The survey for the balance of this line is almost complete, and I believe we will be able to contract the balance the first thing in the Spring.

Bridge sites and foundations were examined for many counties, and advice given on these matters.

Plans and specifications for bridges as submitted were checked over and approved or modified.

Plans and specifications for bridges, culverts and grading or graveling were prepared and sent out to many of the counties.

A separate table of the contract work is appended, which gives the essential items of each piece of work.

In the office, a great deal of correspondence has been handled, letters and catalogues filed; all county bills checked, vouchers issued, and the accounts with the 62 counties kept; in addition to the records of the Commission and issuance of circular letters and bulletins relating to State and county work.

On all of this work, our stenographer, Miss Annie A. Ross, has worked hard and skillfully, and I desire to commend her work.

Respectfully yours,

JAMES E. MALONEY,  
Secretary-Engineer.

## RECEIPTS FOR THE YEARS 1913 AND 1914

	1913	1914	
Internal Improvement and Internal Improvement Income Fund.....	\$490,000.00*	\$210,000.00	
Motor Vehicle License .....	27,974.35	38,302.44	
Motor Vehicle Fines.....	6.50	47.75	
	<hr/>		
Totals for year.....	\$517,980.85	\$248,350.19	
Total for 1913 and 1914 .....			\$766,331.04

## PROBABLE RECEIPTS FOR 1915

Internal Improvement and Internal Improvement Income Fund .....	\$115,000.00	
Motor Vehicle License.....	40,000.00	
	<hr/>	
Total.....		\$155,000.00

\*NOTE.—Includes 1911, 1912, 1913 and 1914 and accumulation of balances carried forward from previous years.

# STATEMENT OF APPORTIONMENTS AND EXPENDITURES BY THE STATE HIGHWAY COMMISSION FOR THE YEARS 1913 AND 1914.

(Arranged according to Advisory Board Districts, as to apportionments and expenditures.)

COUNTY	DISTRICT NO. 1				State Money Expended to Nov. 30, 1913	State Money Expended to Nov. 30, 1914	Total Sum State Money Expended to 1913 and 1914
	Apportioned Year Ending Nov. 30, 1913	Apportioned Year Ending Nov. 30, 1914	Total Sum Apportioned				
Adams.....	\$ 13,000	\$ 10,500	\$ 23,500	\$ 11,091.10	\$ 8,129.44	\$	19,220.54
Arapahoe.....	11,200	3,000	14,200	7,352.11	5,219.71		12,571.82
Boulder.....	13,500	8,550	22,050	8,739.71	11,348.50		20,088.21
Clear Creek.....	8,000	1,000	9,000	5,441.81	3,558.18		8,999.99
Gilpin.....	4,200		4,200	3,719.61			3,719.61
Jefferson.....	19,500	7,550	27,050	17,500.00	7,100.00		24,600.00
Larimer.....	15,200	6,500	21,700	1,673.10	20,026.96		21,700.00
Logan.....	7,800	2,000	9,800	7,800.00	1,795.80		9,595.80
Morgan.....	2,300	5,000	13,300	8,179.26	3,945.13		12,124.39
Phillips.....	2,700	1,000	3,700	2,106.07	533.82		2,639.89
Sedgewick.....	3,800	1,500	5,300	3,800.00	1,500.00		5,300.00
Washington.....	4,400	1,000	5,400	4,250.42	662.34		4,912.76
Weld.....	8,500	4,000	12,500	4,413.82	7,086.18		11,500.00
Yuma.....	2,200	1,000	3,200	2,200.00	1,000.00		3,200.00
Totals.....	\$ 122,300	\$ 52,600	\$ 174,900	\$ 88,267.01	\$ 71,906.00	\$	162,173.01

STATEMENT OF APPORTIONMENTS AND EXPENDITURES BY THE STATE HIGHWAY  
COMMISSION FOR THE YEARS 1913 AND 1914—Continued.

COUNTY	DISTRICT NO. 2				State Money Expended to Nov. 30, 1914	Total Sum State Money Expended 1913 and 1914
	Apportioned Year Ending Nov. 30, 1913	Apportioned Year Ending Nov. 30, 1914	Total Sum Apportioned	State Money Expended to Nov. 30, 1913		
Chaffee...	\$ 8,200	\$ 4,000	\$ 12,200	\$ 8,200 00	\$ 3,828 25	\$ 12,028 25
Cheyenne	3,500	1,000	4,500	3,500 00	1,000 00	4,500 00
Douglas...	27,000	20,000	47,000	18,615 43	25,212 27	43,827 70
El Paso	14,500	8,000	22,500	14,500 00	8,000 00	22,500 00
Elbert...	5,000	3,000	8,000	5,000 00	2,388 26	7,388 26
Kitt Carson	4,500	1,500	6,000	4,000 00	2,000 00	6,000 00
Lincoln...	5,000	1,500	6,500	3,450 78	3,049 22	6,500 00
Lake.....	13,000		13,000	4,566 60	8,433 40	13,000 00
Park.....	8,000	2,000	10,000	6,114 96	3,885 04	10,000 00
Teller.....	10,000	3,500	13,500	9,000 00	271 75	9,271 75
Totals	\$ 98,700	\$ 44,500	\$ 143,200	\$ 76,947 77	\$ 58,068 19	\$ 135,015 96

# STATEMENT OF APPORTIONMENTS AND EXPENDITURES BY THE STATE HIGHWAY COMMISSION FOR THE YEARS 1913 AND 1914—Continued.

DISTRICT NO. 3

COUNTY	Apportioned Year Ending Nov. 30, 1913	Apportioned Year Ending Nov. 30, 1914	Total Sum Apportioned	State Money Expended to Nov. 30, 1913	State Money Expended to Nov. 30, 1914	Total Sum State- Money Expended to 1913 and 1914
Baca	\$ 1,600	\$ 1,000	\$ 2,600	\$	\$ 1,933 31	\$ 1,933 31
Bent	3,000	2,000	5,000	\$ 2,015 03	2,984 97	5,000 00
Custer	2,200	1,000	3,200	1,223 77	1,463 97	2,687 74
Crowley	3,000	1,500	4,500	1,193 53	1,800 86	3,084 39
Fremont	30,650	12,000	42,650	13,861 19	19,783 02	33,644 21
Huerfano	6,000	3,000	9,000	4,463 73		4,463 73
Kiowa	2,000	1,000	3,000	1,788 05	1,129 03	2,917 08
Las Animas	10,000	3,000	13,000	5,368 71	7,631 29	13,000 00
Otero	17,600	2,000	19,600	15,108 85	2,491 15	17,600 00
Pueblo	16,500	4,000	20,500	12,075 14	8,424 86	20,500 00
Prowers	6,000	3,500	9,500	6,000 00	3,500 00	9,500 00
Totals	\$ 98,550	\$ 34,000	\$ 132,550	\$ 63,101 30	\$ 51,232 46	\$ 114,333 76

# STATEMENT OF APPORTIONMENTS AND EXPENDITURES BY THE STATE HIGHWAY COMMISSION FOR THE YEARS 1913 AND 1914—Continued.

12

## THIRD BIENNIAL REPORT

COUNTY	DISTRICT NO. 4				State Money Expended to Nov. 30, 1913	State Money Expended to Nov. 30, 1914	Total Sum State Money Expended 1913 and 1914
	Apportioned Year Ending Nov. 30, 1913	Apportioned Year Ending Nov. 30, 1914	Total Sum Apportioned				
Archuleta.....	\$ 7,800	\$ 1,000	\$ 8,800	\$ 7,800 00	\$ 1,000 00	\$	\$ 8,800 00
Alamosa.....	3,000	500	3,500		1,479.44		1,479.44
Costilla.....	3,000	1,000	4,000		2,034.57		2,034.57
Conejos.....	6,750	1,000	7,750	6,671.77	468.37		7,140.14
Dolores.....	4,200	1,000	5,200	4,168.05	1,031.95		5,200.00
Delta.....	5,800	1,500	7,300	5,800.00	1,500.00		7,300.00
Elwood Pass.....	28,000	30,500	58,500	25,630.09	14,650.77		40,280.86
Gunnison.....	20,100	2,645.25	22,745.25	20,100.00	2,500.00		22,600.00
Hinsdale.....	4,200	1,000	5,200	4,200.00	1,000.00		5,200.00
La Plata.....	15,000	2,000	17,000	9,784.94	7,214.56		16,999.50
Montrose.....	10,700	3,500	14,200	10,700.00	3,500.00		14,200.00
Montezuma.....	6,500	1,000	7,500	4,276.97	3,223.03		7,500.00
Mineral.....	4,000	2,000	6,000	3,951.94	2,004.41		5,956.35
Ouray.....	9,200	2,000	11,200	7,727.35	2,290.98		10,018.33
Rio Grande.....	6,750	1,000	7,750	6,750.00	1,000.00		7,750.00
San Miguel.....	7,000	1,000	8,000	7,000.00	861.75		7,861.75
San Juan.....	19,000	2,500	21,500	17,689.10	1,101.91		18,791.01
Saguache.....	9,000	1,000	10,000	8,249.18	1,750.82		10,000.00
Totals.....	\$ 170,000	\$ 56,145.25	\$ 226,145.25	\$ 150,499.39	\$ 48,632.56		\$ 199,131.95

STATEMENT OF APPORTIONMENTS AND EXPENDITURES BY THE STATE HIGHWAY  
COMMISSION FOR THE YEARS 1913 AND 1914—Concluded.

COUNTY	DISTRICT NO. 5					Total Sum State Money Expended 1913 and 1914
	Apportioned Year Ending Nov. 30, 1913	Apportioned Year Ending Nov. 30, 1914	Total Sum Apportioned	State Money Expended to Nov. 30, 1913	State Money Expended to Nov. 30, 1914	
Eagle.....	\$ 13,600	\$ 1,500	\$ 15,100	\$ 6,586.08	\$ 8,057.71	\$ 14,643.79
Grand.....	9,800	3,000	12,800	9,800.00	1,418.47	11,218.47
Garfield.....	14,000	5,500	19,500	14,000.00	5,500.00	19,500.00
Jackson.....	2,850	2,000	4,850	1,965.36	2,884.64	4,850.00
Mesa.....	10,000	3,500	13,500	10,000.00	3,500.00	13,500.00
Moffat.....	5,500	8,800	14,300	4,461.87	8,838.13	13,300.00
Pitkin.....	12,000	1,500	13,500	2,489.62	11,010.38	13,500.00
Rio Blanco.....	13,400	4,600	18,000	7,741.49	8,861.45	16,602.94
Routt.....	8,500	2,500	11,000	6,550.89	3,941.62	10,492.51
Summit.....	5,000	2,000	7,000	5,000.00	2,000.00	7,000.00
Totals.....	\$ 94,650	\$ 34,900	\$ 129,550	\$ 68,595.31	\$ 66,012.40	\$ 124,607.71

## SUMMARY.

## AMOUNT APPORTIONED FOR YEAR ENDING NOVEMBER 30, 1913

District No. 1..	\$122,300.00
District No. 2..	98,700.00
District No. 3..	98,550.00
District No. 4..	170,000.00
District No. 5..	94,650.00

Total amount apportioned in 1913

\$584,200.00

## STATE MONEY EXPENDED IN YEAR ENDING NOVEMBER 30, 1913

District No. 1..	\$ 88,267.01
District No. 2..	76,947.77
District No. 3..	63,101.30
District No. 4..	150,499.39
District No. 5..	68,595.31

Total amount expended in year ending Nov. 30, 1913

\$447,410.78

## AMOUNT APPORTIONED FOR YEAR ENDING NOVEMBER 30, 1914

District No. 1..	\$ 52,600.00
District No. 2..	44,500.00
District No. 3..	34,000.00
District No. 4..	56,145.25
District No. 5..	34,900.00

Total amount apportioned in 1914.

\$222,145.25

## STATE MONEY EXPENDED IN YEAR ENDING NOVEMBER 30, 1914

District No. 1..	\$ 71,906.00
District No. 2..	58,058.19
District No. 3..	51,252.46
District No. 4..	48,632.56
District No. 5..	56,012.40

Total amount expended in year ending Nov. 30, 1914

\$285,851.61





DRAGGING PUEBLO-BEULAH ROAD, CONVICT LABOR—STATE  
SECONDARY ROAD NO. 7 s.



PUEBLO-BEULAH ROAD—STATE SECONDARY ROAD NO. 7 s.



## SUMMARY—Concluded.

## TOTAL APPORTIONMENTS 1913 AND 1914

District No. 1	\$174,900.00
District No. 2.	143,200.00
District No. 3	132,550.00
District No. 4	226,145.25
District No. 5	129,550.00
Total	<hr/> \$806,345.25

## TOTAL PAYMENTS 1913 AND 1914

District No. 1.	\$162,173.01
District No. 2.	135,015.96
District No. 3.	114,333.76
District No. 4.	199,131.95
District No. 5.	124,607.71
Total.	<hr/> \$735,262.39

## BALANCES UNEXPENDED TO NOVEMBER 30, 1914

District No. 1.	\$ 14,726.99
District No. 2.	8,184.04
District No. 3.	18,216.24
District No. 4.	27,013.30
District No. 5.	4,942.29
Total	<hr/> \$ 73,082.86

NOTE.—Of this total \$163,445.25 was out of the 25% fund, and the balance—\$642,900 from 1 to 1, to 5 to 1 ratios.

Amount spent on State roads in 1913 and 1914 by State	\$ 735,262.39
Amount spent on State roads in 1913 and 1914 by counties.	1,264,287.57

Total amount spent by both counties and State on State roads, 1913 and 1914	<hr/> \$1,999,549.96
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All salaries and expenses of the State Highway Commission for the years 1913 and 1914, amount to 4% of the State money expended upon the improvement of the State Highways; and 1.5% of the State and County expenditures.

# DETAILS OF SALARIES AND EXPENSES FOR 1913 AND 1914.

			Total 1913 and 1914
Salaries:	Year 1913	Year 1914	
Commissioner.	\$ 2,056.45	\$ 3,000.00	\$ 5,056.45
Secretary-Engineer.	1,439.51	2,100.00	3,539.51
Stenographer.	800.00	1,200.00	2,000.00
Two Supervisors.	1,440.87	3,000.00	4,440.87
Assistant Engineer.		187.10	187.10
Total.	\$ 5,736.83	\$ 9,487.10	\$15,223.93
Expenses—Traveling:			
Advisory Board (5 members)	\$ 1,079.90	\$ 688.65	\$ 1,768.55
Commissioner.	566.81	430.90	997.71
Secretary-Engineer.	458.45	443.83	902.28
Two Supervisors.	832.65	1,434.50	2,267.15
Automobile (original cost).	2,401.85		2,401.85
(Running expense)	488.95	1,015.77	1,504.72
Total.	\$ 5,828.61	\$ 4,013.65	\$ 9,842.26
Expenses—Office:			
Stamps.	\$ 85.95	\$ 97.00	\$ 182.95
Stationery, pens, ink, etc.	86.73	193.62	285.35
Blue printing.	76.51	104.48	180.99
Maps.	64.47	227.00	291.47
Drafting, supplies, and pocket level		53.00	53.00
Filing cases.		49.85	49.85
Typewriter, adding machine, and duplicator.	145.80	66.83	512.63
Old bills of former Commission, 1911 and 1912.	1,133.00	615.24	1,748.24
Printing.	102.22	208.47	310.69
Telephone.	149.20	203.75	352.95
Telegraph.	13.55	7.27	20.82
Expressage.	1.60	18.36	19.96
Films and photo prints.	15.10	41.70	56.80
Exhibit at Atlanta Road Congress.		30.45	30.45
Tent.	15.50		15.50
Total.	\$ 2,189.63	\$ 1,922.02	\$ 4,111.65
Total salaries and all expenses, for Biennial period, 1913 and 1914.	\$13,755.07	\$15,422.77	\$29,177.84

# EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914.

DISTRICT NO. 1 FOR 1913

COUNTY	Grading—		Bridges—		Culverts—		Surfacing—		Surveying	Dragging	Total
	Miles	Cost	No.	Inc. in grading	Cost	No.	Cost	Miles			
Adams.....	30	\$ 11,280.60	7		\$ 3,100.80	22	\$1,311.60	6½	\$ 156.15	\$ 225.00	\$ 20,977.68
Arapahoe.....	11	1,812.20	5		10,587.35	14	551.19		35.65		12,986.39
Boulder.....	(7)	4,208.90	Inc. in culverts			(5)	1,867.94	7	11,149.93	252.65	17,479.42
Clear Creek.....	35	10,538.85							799.25		11,338.10
Gilpin.....	16	7,107.07				(10)	330.66				7,437.73
Jefferson.....	18	61,135.34	Inc. in grading								61,135.34
Larimer.....	186	17,758.90	3		1,568.25	(10)	300.00		461.20		20,088.35
Logan.....	92	8,013.02	5		6,696.24	(20)	600.60			600.00	15,909.26
Morgan.....	(10)	13,239.01	Inc. in grading								13,239.01
Phillips.....	35	2,908.62				1	74.40				2,983.02
Sedgewick.....	14½	3,969.13	2		996.00			3	1,314.83	437.48	6,717.44
Washington.....	(15)	6,040.36				(2)	579.15	(1)	100.00	157.50	6,877.61
Weld.....	31	14,175.24	7	Inc. in grading convict work				3			14,175.24
Yuma.....	(30)	4,558.61									4,558.61
Totals (14 counties).....	530½	\$166,745.85	29	\$ 22,948.64	\$5,614.94	84	\$17,468.29	20½	\$2,299.88	\$ 825.00	\$215,902.60

NOTE.—Figures in parentheses are approximate.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 2 FOR 1913

COUNTY	Grading— Miles	Bridges		Culverts—		Surfacing—		Cost	Surveying	Drugging	Total
		Cost	No.	Cost	No.	Cost	Miles				
Chaffee	98	\$ 13,590.55							\$ 366.20		\$ 13,956.75
Cheyenne	63	3,367.05	3	\$ 1,080.97	10	\$ 400.50			299.10		5,147.62
Douglas	52	21,519.98	5	2,500.00	25	2,508.22	1	\$ 112.00	3,110.31		29,750.51
Elbert	40	9,813.29	2	400.00	18	578.08			319.25		11,110.62
El Paso	182	48,648.55	5	16,041.10	85	2,697.37	78	3,150.00	150.00		70,687.02
Kitt Carson	25	5,396.31			70	1,278.58			626.10		7,501.19
Lake	6	5,642.10				946.29			2,184.66		8,773.05
Lincoln	20	5,004.48	4	2,334.18							7,338.66
Park	145	10,074.95	5	1,375.00	22	674.00	1 $\frac{1}{2}$	400.00	734.25		13,248.20
Teller											42,834.52
Totals (10 counties)	631	\$123,257.46	24	\$ 23,731.25	230	\$ 9,083.04	79 $\frac{1}{2}$	\$3,662.00	\$7,779.87		\$207,848.14

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 3 FOR 1913

COUNTY	Grading—		Bridges—		Culverts—		Surfacing—		Cost	Surveying	Drugging	Total
	Miles	Cost	No.	Cost	No.	Cost	Miles					
Baca.....	( 5)	\$ 100.00			10	\$ 600.00			\$ 110.00		\$ 710.00	
Bent.....	6	4,294.79			(25)	1,400.00	3	1,000.00	326.00		7,020.79	
Crowley.....	( 5)	975.70	1	1,429.00							2,404.70	
Custer.....	16	6,959.21			19	302.76					7,261.97	
Fremont.....	7	10,978.17	3	12,620.00	(20)	2,000.00	4	1,400.00	1,141.58	900.00	29,039.75	
Huerfano.....	28	9,977.73	2	619.60	(10)	2,330.40			633.40		13,561.13	
Kiowa.....	8	1,423.55	1	30.00	9	295.00	4	1,638.95	148.60		3,536.10	
Las Animas.....	11½	5,060.76	Inc. culverts		( 5)	7,227.07			614.30		12,902.13	
Otero.....	19½	577.50	5	38,555.84	6	472.50	1½	587.00		754.40	40,947.24	
Prowers.....	29	8,196.85	1	2,645.80	(40)	1,121.11			1,294.74		13,258.50	
Pueblo.....	31½	9,221.44	7	11,828.12	38	2,504.96	16½	6,786.20	383.75		30,724.47	
Totals (11 counties).....	270	\$ 57,765.70	20	\$ 67,728.36	182	\$ 18,253.80	28	\$ 11,412.15	\$ 4,652.37	\$ 1,654.40	\$ 161,366.78	

NOTE.—Figures in parentheses are approximate.



## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 4 FOR 1913

COUNTY	Grading—		Bridges—		Culverts—		Surfacing—		E		Total
	Miles	Cost	No.	Cost	No.	Cost	Miles	Cost	Surveying	Drainage	
Archuleta.....	33	\$ 12,910.07	2	\$ 5,700.00		\$3,000.00	1	\$ 300.00	\$ 366.40		\$ 22,276.47
Alamosa.....	Not organized in 1913										
Costilla.....	45.5	2,556.94	1	682.86					520.75		3,760.55
Conejos.....	(80)	13,492.70									13,492.70
Delta.....	76	7,349.02	2	2,955.75	(40)	1,260.92			495.60		12,061.29
Dolores.....	13	4,596.35	1	35.00	1	72.00			506.65		5,210.00
Gunnison.....	(80)	33,571.44	1	3,300.00	(40)	1,657.00			2,421.31		40,949.75
Hinsdale.....	(10)	4,700.00	11	690.00	(40)	459.00					5,849.00
La Plata.....	23	15,270.30	5	980.00	93	1,520.00	1	1,449.87	1,155.00		20,375.17
Montezuma.....	(20)	6,193.55							730.35	\$ 31.50	6,955.40
Montrose.....	27	24,978.74	11	6,820.55			1.6	68.13	3,084.55	438.53	35,390.50
Mineral.....	41	6,603.40							1,267.50		7,870.90
Ouray.....	(36)	12,953.86	1	160.00	34	1,141.35	2	1,175.00	24.00		15,454.21
Rio Grande.....	69	14,126.86	Inc. in amount given								
San Miguel.....	15	17,732.57	2	700.00	87	459.00			903.40		19,794.97
Saguache.....	(10)	15,411.66							1,086.73		16,498.39
San Juan.....	( 8)	25,522.55									25,522.55
Elwood Pass.....	{ 4	16,288.00	3	341.70	43	848.20			1,308.59		18,786.49
	{ 2	7,482.96									7,482.96
Totals (17 counties) .....	592.5	\$241,940.96	40	\$ 22,365.86	378	\$ 10,417.47	4 1-6	\$2,993.00	\$13,870.83	\$ 470.03	\$201,858.15

NOTE.—Figures in parentheses are approximate.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 5 FOR 1913

COUNTY	Grading— Miles	Bridges—		Culverts—		Surfacing—		Cost	Surveying	Dragging	Total
		Cost	No.	Cost	No.	Cost	Miles				
Eagle	(25)	\$ 9,100.38									\$ 9,100.38
Garfield	(40)	29,072.41			60	\$2,299.23	Inc. in grading				31,371.64
Grand	(50)	17,909.11	Inc. in grading								18,633.86
Jackson	(40)	2,160.23	14	\$ 1,129.01	2	10.55	½	285.95	\$ 724.75		3,878.96
Mesa	40	18,658.61		11,007.15	Inc. in bridges				293.17		30,426.26
Moffat	19	6,838.49	3	1,105.41	Inc. in bridges				700.50		8,838.40
Pitkin	15	6,293.55	Inc. in grading						889.50		7,183.05
Rio Blanco	12	6,503.99	1	4,906.25	1	650.00			1,614.25		13,674.49
Routt	151½	11,868.64	5	4,439.26	149	3,164.94			2,416.02		21,888.86
Summit	(20)	10,274.38	( 4)	2,202.67	(20)	505.15			519.00		13,501.20
Totals (10 counties)	412.5	\$118,679.79	27	\$ 24,789.75	232	\$6,629.87	1½	\$ 285.95	\$8,111.69		\$138,497.05

NOTE.—Figures in parentheses are approximate.

## SUMMARY OF EXPENDITURES DURING SEASON OF 1913 ON STATE ROADS.

	Grading—		Bridges—		Culverts—		Surfacing—		Surveying	Dragging	Total
	Miles	Cost	No.	Cost	No.	Cost	Miles	Cost			
District No. 1, 14 counties.	530½	\$166,745.85	29	\$ 22,948.64	84	\$ 5,614.94	20½	\$17,468.29	\$ 2,299.88	\$ 825.00	\$215,902.60
District No. 2, 10 counties.	631	123,237.46	24	23,731.25	230	9,083.04	79½	3,662.00	7,779.87		207,848.14
District No. 3, 11 counties.	270	57,765.70	20	67,728.36	182	18,253.80	28	11,412.15	4,652.37	1,654.40	161,366.78
District No. 4, 17 counties.	572½	241,940.96	40	22,365.86	378	10,417.47	4 1-6	2,993.00	13,870.83	470.03	291,858.15
District No. 5, 10 counties.	412½	118,679.79	27	24,789.75	232	6,629.87	1½	285.95	8,111.69		158,497.05
	2,416½	\$708,389.76	140	\$161,563.86	1,106	\$ 49,999.12	132½	\$35,821.39	\$36,714.64	\$2,949.43	\$1,035,472.72

NOTE.—Does not include any moneys expended by Cities and Towns for streets and roads.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 1 FOR 1914

COUNTY	Grading— Miles	Bridges—		Culverts—		Surfacing—		Total
		Cost	No.	Cost	No.	Cost	Miles	
Adams.....	54	\$ 8,679.37	3	\$ 3,112.79	(8)	\$ 230.40	(2)	\$1,712.70 \$ 15,634.08
Arapahoe.....	56	1,608.90	3	5,487.40	(50)	2,234.70	2½	Inc. in grading 218.85 9,701.50
Boulder.....	13	10,924.39	2	980.40	10	1,518.97	10	9,593.03 239.10 1,313.86 24,652.97
Clear Creek.....	(388)	9,958.22	Inc. in grading					9,958.22
Gilpin.....	25	1,114.25			(4)	206.24		1,320.49
Jefferson.....	11	10,898.62	1	1,249.74	44	1,279.76	6	12,133.52 25,561.64
Larimer.....	19½	40,880.49	5	3,220.17	1	130.63	11¾	11,856.95 8,717.23 66,747.57
Logan.....	(10)	2,364.70			(12)	600.00	2	650.00 75.00 4,689.70
Morgan.....	(8)	10,000.00	1	8,946.89	Inc. in grading			18,946.89
Phillips.....	36	1,877.43	1	65.80*				435.37 3,076.93
Sedgwick.....	(40)	2,117.98	Inc. in grading	(5)	167.07	Inc. in grading		2,285.05
Washington.....	42	1,708.81	1	274.30				1,983.11
Weld.....	(40)	31,299.01	2	1,126.78	(30)	1,602.00		34,027.79
Yuma.....	(20)	2,476.45	1	400.00		Inc. in grading		2,876.45
Totals.....	412.25	\$135,858.62	20	\$35,686.82	164	\$7,909.77	34.25	\$35,686.82 \$2,970.55 \$13,330.81 \$221,462.39

NOTE.—Figures in parentheses are approximate. \* Including repairs.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 2 FOR 1914

COUNTY	Grading—		Bridges—		Culverts—		Surfacing—		Cost	Surveying	Dragging	Total
	Miles	Cost	No.	Inc. in grading	Cost	No.	Miles	Cost				
Chaffee.....	...	\$ 7,556.79									\$	7,656.79
Cheyenne.....	63	3,228.61	2		373.70	13	10	324.49	Inc. in grading	7.50	14.50	3,948.80
Douglas.....	104	22,416.44	3		7,826.48	40	12	1,290.51	Inc. in grading	2,379.95	347.15	34,260.53
Elbert.....	33	5,392.57	..		.....	20	10	894.96	Inc. in grading	109.35	.....	6,396.88
El Paso.....	173	13,796.00	8		19,362.34	24	67	1,593.00	\$21,150.00	1,262.68	5,462.00	62,826.02
Kit Carson.....	(40)	5,547.45	Inc. in grading			(20)	Inc. in grading	916.42	Inc. in grading	121.30	203.00	6,788.17
Lake.....	3	8,826.82	4		311.70	26	3	1,206.70	Inc. in grading	1,297.38	120.00	11,762.60
Lincoln.....	77	3,360.29	2		1,300.00	10	10	344.11	Inc. in grading	.....	.....	5,004.40
Park.....	(50)	10,000.00	5		1,860.80	31	.....	520.00	.....	623.55	4,000.00	17,004.35
Teller.....	50.7	29,062.83	Inc. in grading—no division made				.....	.....	.....	.....	.....	29,062.83
Totals.....	593.7	\$109,187.80	24		\$ 31,235.02	184	112	\$7,090.19	\$21,150.00	\$5,801.71	\$10,146.65	\$184,711.37

NOTE.—Figures in parentheses are approximate.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 3 FOR 1914

COUNTY	Grading—		Bridges—		Culverts—		Surfacing		Cost	Surveying	Dragging	Total
	Miles	No.	Cost	No.	Cost	No.	Miles	Cost				
Baca	18		\$ 1,164.46			2		\$ 537.94		\$ 174.80		\$ 1,877.20
Bent.	40		2,115.00	1	\$ 460.53	(4)		200.00			\$2,023.00	4,798.53
Crowley		1			1,693.20	(10)		246.70		87.05	1,442.20	3,469.15
Custer	16		1,050.75	2	655.73	15		317.52	17	\$ 238.50	6.00	2,330.50
Fremont	15.1		55,701.66	Inc. in grading								55,701.66
Kiowa	24.5		685.32			3		50.00		190.00	41.20	2,258.07
Huerfano	9		7,474.97	1	770.42	56		1,567.20			2,362.53	12,175.12
Las Animas	126		5,883.77	**3	11,104.10	(See bridges)				741.05	3,965.73	21,694.65
Otero	37		1,659.10	5	7,286.85*	3		363.95	6½		1,003.61	12,920.56
Pueblo	19		5,168.28	7	24,608.20	52		3,837.39	13¾	4,292.45	5,802.85	53,264.27
Prowers	7	(a)	7,279.68	Inc. in grading						1,268.85		8,548.53
Totals	311.6		\$ 88,182.99	20	\$ 45,579.03	145	\$ 7,120.70	42¼	\$ 13,692.20	\$ 6,816.20	\$ 16,647.12	\$179,038.24

\*\*Includes culverts. \*Includes repairs. (a) Includes culverts and surfacing. NOTE. Figures in parentheses are approximate.

## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Continued.

## DISTRICT NO. 4 FOR 1914

COUNTY	Grading—		Bridges		Culverts		Surfacing—		Total
	Miles	Cost	No.	Cost	No.	Cost	Miles	Cost	
Alamosa	61 <sup>1</sup> / <sub>2</sub>	\$ 4,360 40	1	\$ 42 47	7	\$ 101.16	1	Inc. in grading	\$ 1,031 75
Archuleta	(10)	2,650 82			(10)	415.10	Inc. in grading		3,065 92
Costilla	33	1,604 15	1	599.80	Inc. in bridge		174 00		2,390.45
Concejos			1	430.00	2	48 00	4	\$ 187 50	1,125 20
Delta			5	7,063.60*	(20)	2,075 92	Inc. in grading		1,681 23
Dolores	1	2,583 44			5	35 00	1	Inc. in grading	870 29
Gunnison	80	15,143.28	1	1,410 30	(40)	2,025 37			400 00
Hinsdale	20	2,631 30	2	190.00	30	300 00			18,978.95
La Plata	(50)	8,176 78	3	1,050.00	27	1,200.00			3,121 30
Montezuma	(20)	9,952 16	Inc. in grading					1,100 00	11,526 78
Montrose	192	7,610 37	19	2,626.92	(100)	2,824.72	3	962.37	9,952.16
Mineral	35	4,533 35		2.00					15,797 19
Ouray	12	2,817 89	Inc. in grading						45.00
Rio Grande	Inc. in dragging								4,723.35
Saguache	(100)	12,028.84	(1)	1,779.00	Inc. in bridges		(1)	72.00	153 50
San Juan	(10)	2,382 82	Inc. in grading						2,566.25
San Miguel	4 5	11,547 80	3	210.00	24	215.00	2	2,600 00	360 05
Elwood Pass Road	5	13,659 07	3	800 00	(20)	200.00		Inc. in grading	15,040.01
Totals	634	\$101,862 57	40	\$ 16,114 09	285	\$ 9,440 27	12	\$3,821 87	2,362 82
									16,362 70
									14,659 07
									\$148,684 74

\*Includes repairs. NOTE.—Figures in parentheses are approximate.



## EXPENDITURES ON STATE ROADS BY COUNTIES FOR 1913 AND 1914—Concluded.

## DISTRICT NO. 5 FOR 1914

COUNTY	Grading— Miles	Bridges—		Culverts—		Surfacing—		Surveying	Dragging	Total
		Cost	No.	Cost	No.	Cost	Miles			
Eagle	96	\$ 12,567.84								\$ 12,567.84
Garfield	93	45,407.41	4	580.15*	(60)	4,060.40	47	12,760.89	60.50	68,551.75
Grand	31.75	4,952.50	7	5,543.00					500.00	10,995.00
Jackson	14.5	3,418.45	4	2,575.75	24	963.52				6,957.72
Mesa	109	21,322.92	5	2,923.65	56	1,191.04*				
Moffat	33	7,463.27	32	10,729.53	26	939.20			1,810.95	28,193.76
Pitkin	6	22,315.31	2	650.00					3,854.58	24,185.00
Rio Blanco	30	9,772.92	1	336.53	(40)	2,481.67				25,051.81
Routt	153.4	7,007.65	4	5,473.47	(10)	1,003.74			2,330.32	17,413.79
Summit	59.5	11,283.48	(3)	362.73	(14)	627.42			533.20	22,890.20
									1,100.00 Inc. in grading	13,373.63
Totals	626.15	\$145,511.25	62	\$ 29,174.81	230	\$ 11,267.19	47	\$12,760.89	\$ 17,428.49	\$230,180.50

\*Note: Including repairs. Does not include any expenditures for streets or bridges in towns and cities.

NOTE.—Figures in parentheses are approximate.

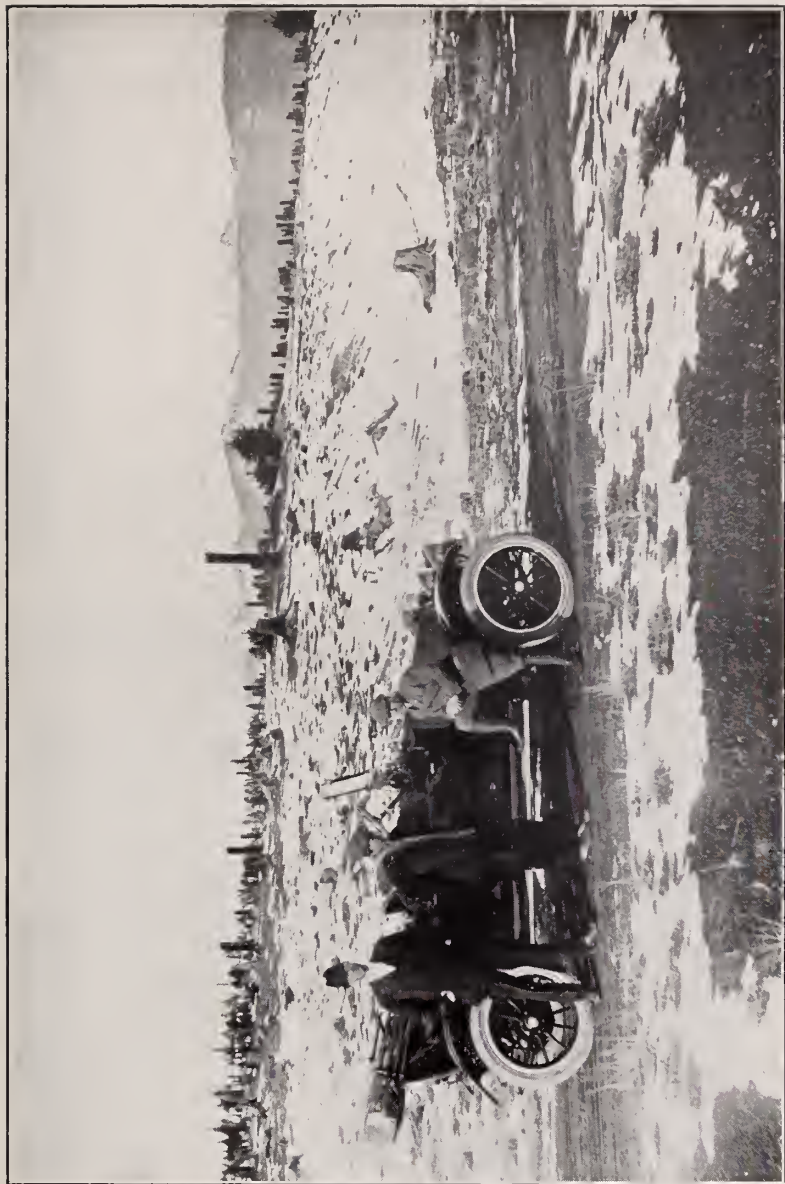
## SUMMARY OF EXPENDITURES DURING SEASON OF 1914 ON STATE ROADS.

	Grading—		Bridges—		Culverts—		Surfacing—		Total																
	Miles	Cost	No.	Cost	No.	Cost	Miles	Cost																	
District No. 1, 14 counties	412 <sup>1</sup> / <sub>4</sub>	\$135,858	62	20 \$	24,864	27	164 \$	7,969	77	34 <sup>1</sup> / <sub>2</sub> \$	35,686	82	8	2,970	55	\$	13,330	81	\$221,462	39					
District No. 2, 10 counties	593	7	109,187	89	24	81,235	02	184	7,090	19	112	21,150	00	5,801	71	10,146	65	184,711	37						
District No. 3, 11 counties	311	6	88,182	99	20	46,579	03	145	7,120	70	42 <sup>1</sup> / <sub>4</sub>	13,692	20	6,816	20	16,647	12	179,038	24						
District No. 4, 17 counties	634		101,862	57	10	16,144	09	285	9,440	27	12	3,821	87	6,606	39	10,809	25	148,684	74						
District No. 5, 10 counties	626	15	145,511	25	62	29,174	81	230	11,267	19	47	12,760	87	14,037	87	17,428	49	230,180	50						
Totals.	2,577	70	\$580,602	23	166	\$	197,997	22	1,008	\$	42,888	12	247	75	\$	87,111	76	\$	36,232	72	\$	68,362	32	\$964,077	24

## SUMMARY OF EXPENDITURES ON STATE ROADS—1913 AND 1914.

	Grading		Bridges		Culverts		Surfacing		Total
	Miles	Cost	No.	Cost	No.	Cost	Miles		
District No. 1	942.75	\$302,604.47	49	\$ 47,812.91	248	\$ 13,584.71	55	\$ 53,155.11	\$ 437,364.99
District No. 2	1,224.7	232,425.26	18	104,966.27	414	16,173.23	191.5	24,812.00	392,559.51
District No. 3	581.6	145,948.69	40	114,307.39	327	25,374.50	70 <sup>1</sup> / <sub>4</sub>	25,104.35	340,405.02
District No. 4	1,226.5	343,803.53	80	38,509.95	663	19,857.74	16.1-6	6,814.87	440,542.89
District No. 5	1,038.65	264,191.04	89	53,964.56	462	17,897.06	47.5	13,016.82	388,677.55
Totals	5,014.2	\$1,288,972.99	306	\$359,561.08	2,114	\$ 92,887.24	380.41	\$122,933.15	\$1,999,549.96

\*NOTE.—Surveying includes supervision and administration charges in all cases.



TOP OF TENNESSEE PASS, LAKE COUNTY—STATE PRIMARY ROAD NO. 10 (NOV. 18, 1913).



# AMOUNTS EXPENDED BY THE COUNTIES OF THE STATE ON ALL COUNTY ROADS OTHER THAN STATE ROADS.

(By Advisory Board Districts.)

## DISTRICT NO. 1

COUNTY	1913			1914			1913 and 1914	
	Grading and Drugging	Bridges and Culverts	Total	Grading and Drugging	Bridges and Culverts	Total	Total	Total
Adams	\$ 18,683.58	\$ 12,053.40	\$ 30,736.98	\$ 24,654.65	\$ 7,610.62	\$ 32,265.27	\$ 63,002.27	\$ 63,002.27
Arapahoe	.....	.....	9,778.35	8,339.00	10,743.00	19,082.00	28,860.55	28,860.55
Boulder	39,792.22	10,500.05	50,292.27	46,794.93	4,349.36	51,144.29	101,436.56	101,436.56
Clear Creek	.....	.....	9,815.32	Included in total			11,370.48	21,185.80
Gipin	2,965.58	183.81	3,149.39	8,937.04	108.00	9,045.04	12,194.43	12,194.43
Jefferson	26,529.14	6,461.98	32,991.12	29,890.18	4,054.80	33,944.98	66,936.10	66,936.10
Larimer	.....	.....	45,753.72	58,937.39	6,836.58	65,773.97	111,527.09	111,527.09
Logan	6,135.00	6,000.00	12,135.00	8,953.67	8,074.62	17,028.69	29,163.69	29,163.69
Morgan	.....	.....	16,228.34	12,806.39	4,792.44	17,598.83	33,827.17	33,827.17
Phillips	3,522.83	413.85	3,936.68	2,483.83	261.91	2,745.74	6,682.42	6,682.42
Sedgwick	10,523.83	603.67	11,127.50	6,584.84	1,641.80	8,226.84	19,354.14	19,354.14
Washington	.....	.....	12,476.15	4,384.99	774.40	5,159.39	17,635.54	17,635.54
Weld	75,529.91	27,048.21	102,578.12	96,306.36	34,734.93	131,041.29	233,619.41	233,619.41
Yuma	.....	.....	3,202.99	No report received			3,202.99	3,202.99
Totals	\$ 183,682.09	\$ 63,264.97	\$ 344,201.93	\$ 309,093.27	\$ 83,982.46	\$ 404,426.81	\$ 748,628.76	\$ 748,628.76

# AMOUNTS EXPENDED BY THE COUNTIES OF THE STATE ON ALL COUNTY ROADS OTHER THAN STATE ROADS—Continued.

## DISTRICT NO. 2

COUNTY	1913			1914			1913 and 1914	
	Grading and Drugging	Bridges and Culverts	Total	Grading and Drugging	Bridges and Culverts	Total	Total	Total
Chaffee			\$ 10,204 36	\$ 21,095 11		\$ 21,095 11	\$ 31,299 47	
Cheyenne	\$ 3,098 90	\$ 1,620 13	4,719 03	1,265 38	None	1,265 38	5,984 41	
Douglas	4,214 24	2,050 55	6,264 79	8,919 48	2,192 31	11,111 79	17,376 58	
Elbert	7,020 00	8,940 00	15,960 00	10,246 50	7,737 55	17,984 05	33,944 05	
El Paso	14,458 35	750 00	15,208 35	2,850 00	3,075 00	5,925 00	21,133 35	
Kit Carson	2,832 38	973 01	3,805 42	3,013 73	Included in grading	3,013 73	6,819 15	
Lake				5,465 25	385 40	5,850 65	5,850 65	
Lincoln	8,823 17	1,603 00	10,426 17	8,496 60	1,124 68	9,621 28	20,047 45	
Park	7,562 33	320 00	7,882 33	7,890 45	180 00	8,070 45	15,952 78	
Teller			500 79	1,412 98	Included in grading and drugging	1,412 98	1,913 77	
Total	\$ 48,009 37	\$ 16,256 72	\$ 74,971 24	\$ 70,655 48	\$ 14,694 94	\$ 85,350 42	\$ 160,321 66	

# AMOUNTS EXPENDED BY THE COUNTIES OF THE STATE ON ALL COUNTY ROADS OTHER THAN STATE ROADS—Continued.

DISTRICT NO. 3

COUNTY	1913			1914			1913 and 1914	
	Grading and Drugging	Bridges and Culverts	Total	Grading and Drugging	Bridges and Culverts	Total	Total	Total
Baca ..	\$ 57.00		\$ 57.00	\$ 86.30		\$ 86.30	\$	143.30
Bent .....	8,727.10	\$ 11,575.03	20,302.13	9,604.65	\$ 1,216.82	10,821.47		31,123.60
Crowley .....	5,122.27	1,126.31	6,248.58	5,786.37	3,356.87	9,143.24		15,391.82
Custer .....			4,746.75	3,018.10	2,076.92	5,095.02		9,841.77
Fremon't .....	27,938.87	913.19	28,852.06	13,244.39	1,727.47	14,971.86		43,823.92
Huerfano .....	3,947.55	406.50	4,354.05	7,245.22		7,245.32		11,599.37
Kiowa .....	730.00	638.60	1,368.60	817.50	1,758.00	2,575.50		3,944.10
Las Animas .....	20,925.41	14,675.00	35,600.41	19,134.89	18,442.80	35,577.69		73,178.10
Otero .....	4,062.00	6,767.09	10,829.09	16,054.45	17,083.91	33,138.39		43,967.48
Powers ..	17,521.57	5,896.45	23,418.02	19,114.03	Included in drugging	19,114.03		42,532.05
Pueblo ..	8,954.50	54,246.29	63,200.79	25,659.34	13,428.28	39,087.62		102,287.62
Total	\$ 97,986.27	\$ 96,244.46	\$ 198,977.48	\$ 119,765.34	\$ 59,090.10	\$ 178,856.44		\$ 377,833.13



# AMOUNTS EXPENDED BY THE COUNTIES OF THE STATE ON ALL COUNTY ROADS OTHER THAN STATE ROADS—Continued.

## DISTRICT NO. 4

COUNTY	1913			1914			1913 and 1914	
	Grading and Drugging	Bridges and Culverts	Total	Grading and Drugging	Bridges and Culverts	Total	Total	Total
Archuleta .....	\$ 7,484 90	\$ 2,770 00	\$ 10,254 90	\$ 6,479 99	\$ 434 15	\$ 14,360 14	\$ 24,615 04	\$ 24,615 04
Alamosa .....		County not organized						
Costilla .....	6,643 76	1,203 28	7,847 04	4,858 33	3,210 38	8,068 71	6,914 74	15,915 75
Conchos .....	6,783 64	1,417 09	8,200 73	4,273 13	3,007 49	7,280 62	15,481 35	15,481 35
Delta .....	17,030 08	4,231 21	21,861 29	738 75	2,365 96	3,104 71	24,966 00	24,966 00
Dolores .....	1,102 31		1,102 31	2,167 61		2,167 61	3,269 92	3,269 92
Gunnison .....	16,215 43		16,215 43	16,597 87	700 05	17,297 92	33,513 35	33,513 35
Hinsdale .....	1,500 00	235 00	1,735 00	1,761 91		1,761 91	3,496 91	3,496 91
La Plata .....	19,024 81	3,801 72	22,826 53		2,100 00	2,100 00	24,926 53	24,926 53
Montezuma .....	10,893 74	4,768 50	15,662 24			13,056 13	28,718 37	28,718 37
Montrose .....	18,718 58	4,287 42	23,006 00	14,491 18	9,448 22	23,939 40	46,945 40	46,945 40
Mineral .....	1,101 98	15 00	1,116 98	1,270 82	100 00	1,370 82	2,487 80	2,487 80
Ouray .....			9,582 57	10,819 03		15,596 01	25,178 58	25,178 58
Rio Grande .....			12,189 48	13,871 29	2,566 25	16,437 54	28,627 02	28,627 02
San Miguel .....			25,653 70	24,128 53	1,610 00	25,728 53	51,382 23	51,382 23
Saguache .....			25,937 33	14,799 46	3,300 82	18,100 28	44,037 61	44,037 61
San Juan .....			2,251 65	Included in total		5,190 61	7,442 26	7,442 26
Totals .....	\$ 107,099 23	\$ 22,729 22	\$ 205,544 26	\$ 116,307 90	\$ 28,843 32	\$ 182,475 68	\$ 387,918 94	\$ 387,918 94

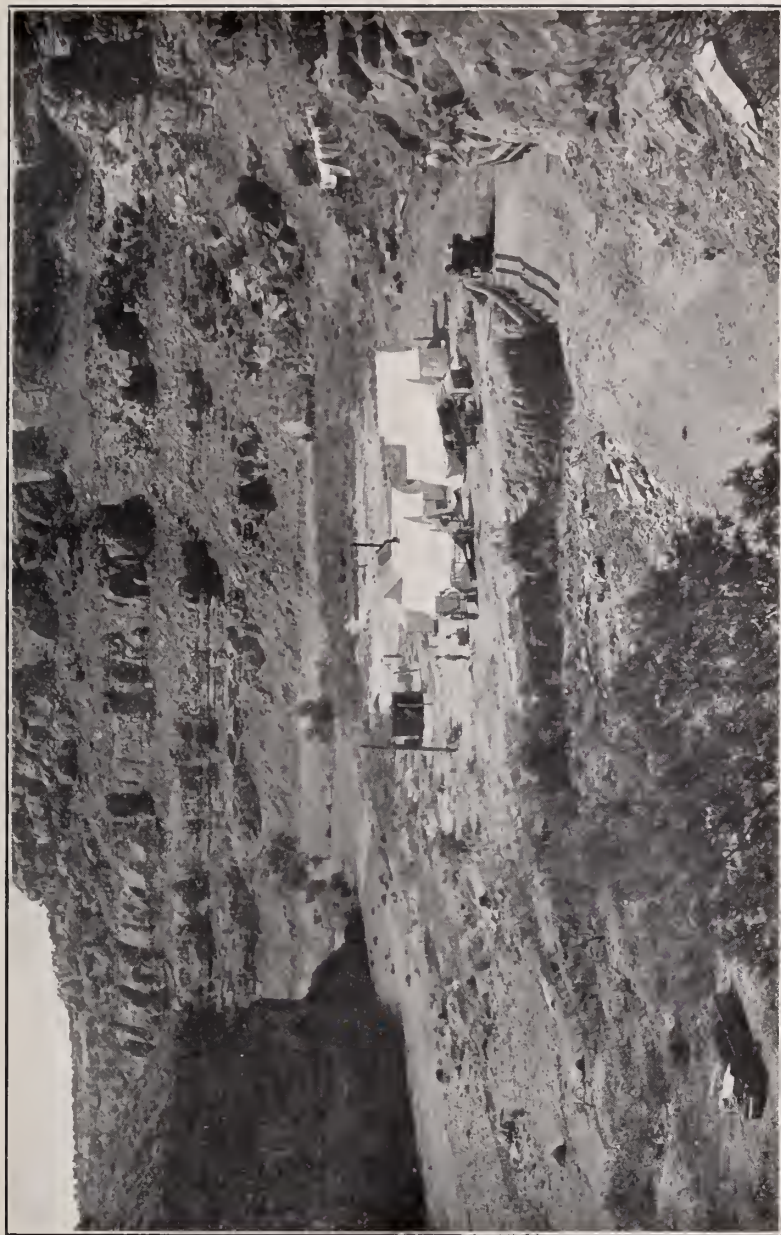
# AMOUNTS EXPENDED BY THE COUNTIES OF THE STATE ON ALL COUNTY ROADS OTHER THAN STATE ROADS—Concluded.

DISTRICT NO. 5

COUNTY	1913			1914			1913 and 1914	
	Grading and Drugging	Bridges and Culverts	Total	Grading and Drugging	Bridges and Culverts	Total	Total	Total
Eagle			\$ 4,223 10	\$ 6,726 57	Included in grading\$	6,726 57	\$ 10,949 67	
Garfield	\$ 5,709 88	\$ 18,000 00	23,709 88	6,286 48	17,772 75	24,059 23	47,769 11	
Grand			6,733 37	9,423 75		9,423 75	16,157 12	
Jackson			3,167 21	3,908 23	75 00	3,983 23	7,150 44	
Mesa	19,652 21	44,836 51	64,488 72	18,735 69	5,808 54	24,544 23	89,032 95	
Moffat			3,082 00	No report received			3,082 00	
Pitkin			3,297 23	2,569 36	1,362 24	3,931 60	7,228 83	
Rio Blanco			8,136 39	4,344 77	None	4,344 77	12,481 16	
Routt	8,841 26	2,449 60	11,290 86	5,858 91	5,564 20	11,423 11	22,713 97	
Summit	2,016 38	433 59	2,449 97	3,243 47	934 72	4,178 19	6,628 16	
Totals	\$ 36,219 73	\$ 65,719 70	\$ 130,578 73	\$ 61,097 23	\$ 31,517 45	\$ 92,614 68	\$ 223,193 41	

# SUMMARY OF EXPENDITURES ON COUNTY ROADS—ALL OTHER THAN STATE PRIMARY AND SECONDARY ROADS.

	1913		1914		1913 and 1914	
	Grading and Dragging	Bridges and Culverts	Grading and Dragging	Bridges and Culverts	Total	Total
ADVISORY BOARD						
District No. 1.....	\$ 183,682.09	\$ 63,264.97	\$ 309,093.27	\$ 83,982.46	\$ 404,426.81	\$ 745,425.77
District No. 2.....	48,009.37	16,256.72	70,655.48	14,694.94	85,350.42	160,321.66
District No. 3.....	97,986.27	96,244.46	119,765.34	59,090.10	178,856.44	377,833.13
District No. 4.....	107,099.15	22,729.22	116,307.90	28,843.32	182,475.68	387,918.94
District No. 5.....	36,219.73	65,719.70	61,097.23	31,517.45	92,614.68	223,193.41
Totals.....	\$ 472,996.61	\$ 264,215.07	\$ 676,919.22	\$ 218,128.27	\$ 943,724.03	\$1,897,895.90



MESA COUNTY CONVICT CAMP, PLATEAU CREEK—STATE PRIMARY ROAD NO. 11.



TABLE SHOWING VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS  
AND ROAD LEVY FOR 1915.

DISTRICT NO. 1									
COUNTY	Valuation 1914	County Road		Miles all		Miles State		Area in Square Miles	Population 1910
		Levy for 1915	All in City limits	Roads 1914	Roads 1914	Roads 1914	Improved Roads to Date		
Denver*	\$ 403,866,385							59	213,381
Adams	22,301,130	1.5	673		89.0	(a) (46)		1,253	8,892
Arapahoe	16,390,195	1.25	378		56.2	(16)		823	10,263
Jefferson	20,336,545	2.25	568		89.5	20		858	14,231
Clear Creek	5,269,300	2.00	110		38.8	(6)		425	5,001
Gilpin	3,678,835	3.00	124		25.25	(2)		130	3,131
Boulder	40,040,490	1.64	613		57.25	30		751	30,330
Larimer	34,479,410	2.55	719		167.75	(18)		2,937	35,270
Weld	76,405,810	1.30	2,364		191.10	(60)		3,918	39,177
Morgan	16,848,617	2.9	696		111.30	(25)		1,264	9,577
Logan	18,608,715	2.00	1,042		92.20	15		1,733	9,549
Sedgewick	5,873,043	2.10	216		30.20	(5)		535	3,061
Phillips	7,368,879	0.70	314		36.00	(5)		677	3,179
Washington	10,840,741	1.00	1,150		52.00	(12)		1,074	6,002
Yuma	9,948,850	1.00	542		166.50	(10)		1,162	8,499
Totals	\$ 692,656,945		9,509		1,203.05	270		17,599	399,543

\*NOTE—City and County of Denver. (a) Improved roads include all those which have some kind of surfacing.

TABLE SHOWING VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS  
AND ROAD LEVY FOR 1915—Continued.

## DISTRICT NO. 2

COUNTY	Valuation 1914	County Road		Miles all		Miles State		Miles of		Area in		Boned	Population
		Levy for	Roads	1914	Roads	1914	Roads	Roads to Date	Square	Miles	Indebtedness		
Lake.....	\$ 13,685,865	0.48	198	198	54.40	( 6)	393				\$595,300	10,600	
Chaffee.....	11,070,425	1.26	307	307	114.70	8	1,224				255,000	7,322	
Park.....	9,001,645	2.0	376	376	142.50	( 3)	2,084				None	2,492	
Teller.....	16,065,100	1.34	170	170	50.70	( 2)	551				None	14,351	
Douglas.....	9,594,600	1.80	576	576	111.50	13	889				15,000	3,192	
El Paso.....	69,416,035	0.90	661	661	202.90	78	2,134				None	43,321	
Elbert.....	10,365,722	1.70	586	586	62.40	(10)	1,852				None	5,331	
Lincoln.....	9,979,510	1.20	264	264	126.50	(10)	2,553				None	5,917	
Kit Carson.....	10,025,703	0.90	1,076	1,076	100.70	(10)	2,168				None	7,483	
Cheyenne.....	7,723,603	0.50	164	164	87.75	(10)	1,787				26,000	3,687	
Totals.....	\$ 167,528,208		4,378	4,378	1,052.05	150	15,635				\$891,300	103,696	



TABLE SHOWING VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS  
AND ROAD LEVY FOR 1915—Continued.

DISTRICT NO. 3											
COUNTY	Valuation 1914	County Road Levy for	Miles all Roads		Miles State Roads		Miles of Improved Roads to Date	Area in		Bonded Indebtedness	Population 1910
			1914	1915	1914	1915		Square Miles	Square Miles		
Fremont.....	\$ 20,110,835	2.0	382		133.7		(10)	1,478		None	18,181
Custer.....	2,582,980	2.50	(351)		60.0		(17)	696		None	1,947
Pueblo.....	65,770,336	1.40	967		158.4		32	2,447		350,000	52,223
Huerfano.....	12,236,885	0.50	(500)		66.8		( 2)	1,537		31,000	13,320
Las Animas.....	39,493,960	1.00	958		112.1		( 6)	4,802		155,000	33,643
Otero.....	27,904,028	2.55	759		80.8		11	1,237		3,500	20,201
Crowley.....	8,347,183	1.30	333		32.0		( 2)	805		Inc. in Otero Co.	
Kiowa.....	7,093,305	0.55	460		97.0		7	1,780			2,898
Bent.....	11,263,175	1.34	447		41.7		( 8)	1,497		28,000	5,043
Prowers.....	18,749,355	1.80	805		117.1		7	1,602		15,500	9,520
Baca.....	2,369,285	0.40	117		63.0			2,531		29,500	2,516
Totals.....	\$ 216,993,992		6,079.0		962.60		102	20,412		\$612,500	159,492

TABLE SHOWING VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS  
AND ROAD LEVY FOR 1915—Continued.

COUNTY	DISTRICT NO. 4						
	Valuation	County Road		Miles State		Area in Square Miles	Population 1910
		Levy for 1915	Roads 1914	Roads 1914	Improved Roads to Date		
Archuleta.....	\$ 4,367,686	3.0	208	46.7	(4)	1,269	3,302
Alamosa.....	6,703,421	1.50	564	64.5	(1)	991 (See Conejos Co.) Inc. in Conejos	
Costilla.....	5,471,250	2.45	126	36.0	(5)	887	5,498
Conejos.....	8,208,523	1.19	595	107.0	4	1,275	11,285
Delta.....	15,116,335	2.00	419	68.5	(3)	1,201	13,688
Dolores.....	1,508,238	2.40	100	41.0	1	1,000	632
Gunnison.....	14,629,029	2.30	673	130.5	(5)	3,277	5,897
Hinsdale.....	910,310	3.00	143	53.1		1,003	646
La Plata.....	15,450,930	2.50	488	111.9	(5)	1,848	10,812
Montezuma.....	6,262,480	3.00	300	100.2	(3)	2,113	5,029
Montrose.....	14,552,480	3.10	509	169.0	(4)	2,290	10,291
Mineral.....	1,719,479	1.90	134	94.1	(2)	880	1,239
Ouray.....	5,730,476	2.50	229	52.4	2	557	3,514
Rio Grande.....	10,462,580	2.00	474	93.6	(3)	1,331	6,563
San Miguel.....	9,309,120	4.00	300	92.5	(3)	1,310	4,700
Saguache.....	11,613,973	2.80	935	148.0	(3)	2,767	4,160
San Juan.....	4,745,575	2.00	125	51.0	(2)	438	3,063
Totals.....	\$ 136,761,894		6,342	1,460.0	50	24,377	90,319
						\$1,800,500	

TABLE SHOWING VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS  
AND ROAD LEVY FOR 1915—Concluded.

DISTRICT NO. 5										
COUNTY	Valuation 1914	County Road		Miles all		Miles State		Miles of Improved Roads to Date	Area in	
		Levy for	1915	Roads	1914	Roads	1914		Square Miles	Bonded Indebtedness
Eagle	\$ 6,505,710	1.80	270	270	104.25	104.25	( 3)	1,586	69,000	2,985
Garfield	18,725,385	3.40	570	570	104.00	104.00	47	3,049	183,300	10,144
Grand	5,107,115	1.75	386	386	182.50	182.50	( 5)	1,873	None	1,862
Jackson	3,949,015	2.00	305	305	111.00	111.00	( 1)	1,400	None	1,013
Mesa	28,210,010	1.53	933	933	108.50	108.50	( 3)	3,309	50,000	22,197
Moffat	4,161,500	2.00	650	650	181.00	181.00	( 2)	4,740	None	(Inc. in Routt)
Pitkin	6,912,515	1.00	193	193	38.00	38.00	6	983	409,500	4,566
Rio Blanco	4,834,572	2.66	448	448	123.00	123.00	(10)	3,249	25,000	2,332
Routt	12,465,619	2.69	456	456	153.00	153.00	( 3)	2,240	None	7,561
Summit	5,819,225	3.00	214	214	59.50	59.50	( 3)	603	..	2,003
Totals	\$ 96,690,666		4,425	4,425	1,164.75	1,164.75	83	23,032	\$ 736,800	54,663

All figures in parentheses are approximate.

# SUMMARY OF VALUATION, AREA, POPULATION, ROAD MILEAGE, INDEBTEDNESS AND ROAD LEVY FOR 1915.

DISTRICTS	Valuation 1914	County Road Levy for 1915	Miles all Roads		Miles State Roads		Miles of Improved Roads to Date	Area in Square Miles		Bonded Indebtedness	Population 1910
			1914	1915	1914	1915					
District No. 1.....	\$ 692,656,945		9,509		1,203.05		270	17,599		\$ 431,800	399,543
District No. 2.....	167,528,208		4,378		1,052.05		150	15,635		891,300	103,696
District No. 3.....	216,993,992		6,079		962.60		102	20,412		612,500	159,492
District No. 4.....	136,761,894		6,342		1,460.00		50	24,377		1,800,500	90,319
District No. 5.....	96,690,666		4,425		1,164.75		83	23,032		736,800	54,663
Totals.....	\$1,310,631,705		30,733		5,842.45		655	101,055		\$4,472,900	807,713

NOTE—Improved roads of all kinds, crowned and drained dirt roads, amount to 5,014 miles.



ROAD EAST FROM MONTROSE UP CEDAR CREEK—STATE PRIMARY ROAD NO. 20.



## STATE ROAD SYSTEM.

## PRIMARY AND SECONDARY ROADS.

Giving Road Number, Termini and Mileage.

(The figures are approximate in some instances, but are as close as our available information warrants.)

## STATE PRIMARY ROADS.

Road No.	Distance—Miles
1 Denver to Golden.....	8.5
2 Denver to Fort Collins and north line of State.....	103.0
Branch to Boulder.....	
3 Denver to Colorado Springs.....	66.0
4 Colorado Springs to Pueblo.....	44.3
5 Pueblo to La Junta (and Pueblo to Florence).....	93.5
6 La Junta to Kansas line.....	99.1
7 Denver to Fort Morgan.....	130.0
8 Sedalia to Palmer Lake, branch to Kiowa.....	53.5
9 Fort Morgan to Colo.-Nebraska State line (via Sterling and Julesburg).....	118.3
10 Leadville to Glenwood Springs.....	93.95
11 Glenwood Springs to Grand Junction, west line of State.....	135.75
12 Grand Junction to Montrose.....	66.0
13 Durango to Montrose.....	136.9
Durango to New Mexico State line.....	
14 Durango to Utah State line.....	81.2
15 Durango to Alamosa.....	155.9
16 Alamosa to south State line, via Conejos, and to Walsenburg, via La Veta.....	117.6
17 Leadville to Buena Vista and Salida to Poncha Pass.....	83.5
18 Colorado Springs to Buena Vista (via Ute Pass and Trout Creek).....	96.0
19 Brush to Wray, Colorado-Nebraska State line.....	111.5
20 Gunnison to Montrose and Utah State line, via Naturita and Paradox.....	159.0
21 Golden to Hot Sulphur Springs.....	78.5
22 Colorado Springs to Salida.....	122.5
23 Sterling to east State line (via Haxtun and Holyoke).....	73.5
24 Fort Morgan to Greeley and Loveland.....	86.0
25 Glenwood Springs to junction with No. 17 at Twin Lakes (via Aspen and Independence Pass).....	81.5
26 Pueblo to south State line via Walsenburg and Trinidad.....	109.1
27 Denver to Morrison and Evergreen, to junction with No. 21.....	24.5
28 Gunnison via Monarch Pass to junction with No. 17.....	70.2
29 La Junta to Trinidad, "Santa Fe Trail".....	82.1
30 Colorado Springs to Limon and to east State line.....	176.4
31 Limon via Deer Trail and Byers to junction with No. 7 near Bennett.....	60.2



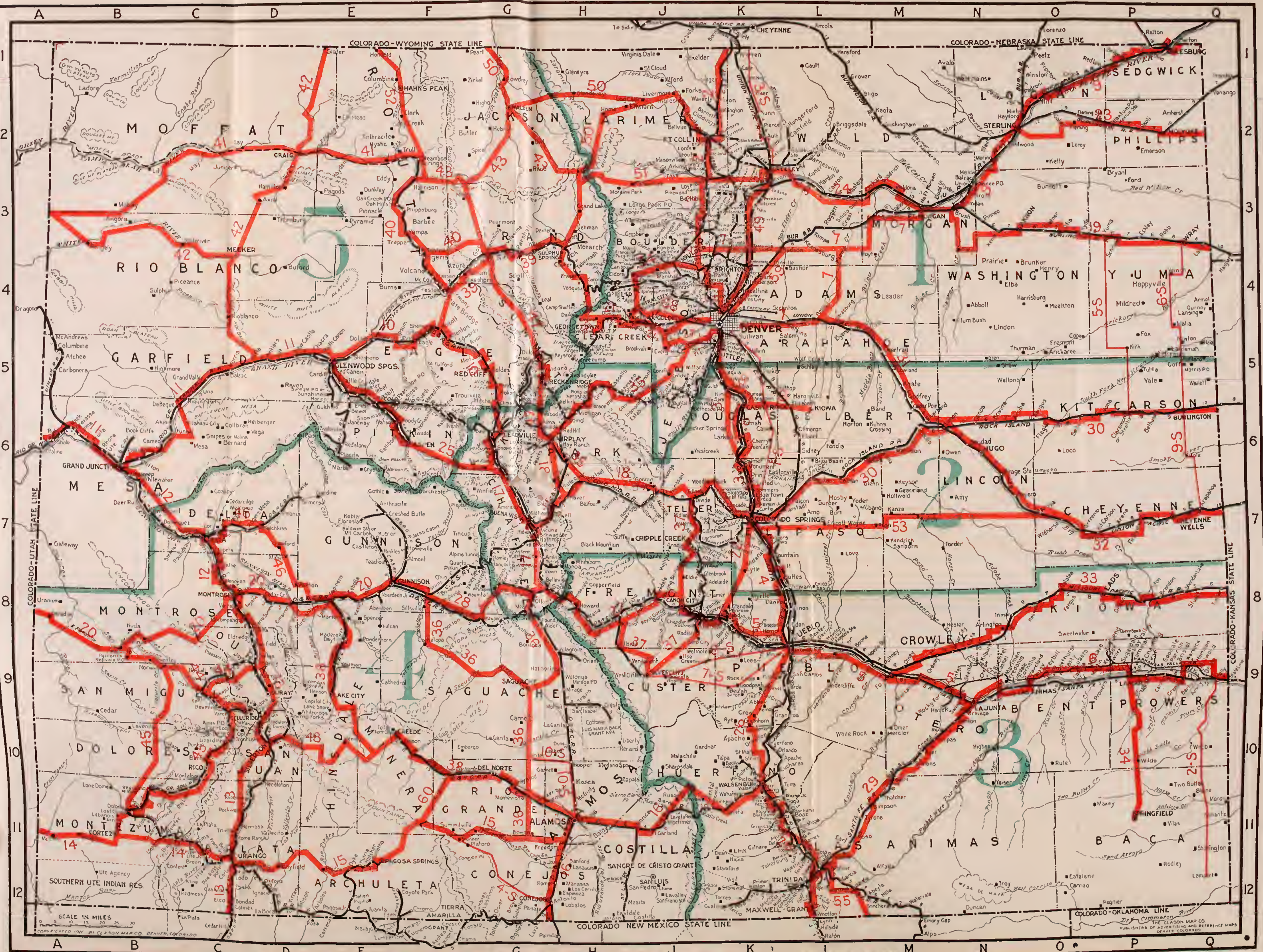
Road No.	Distance—Miles
32 Limon via Cheyenne Wells and east State line.....	104.0
33 Fowler to Eads and east State line.....	130.0
34 Lamar to Springfield.....	55.0
35 Morrison via Turkey Creek to Fairplay, and to join with No. 18, and to Hartzel.....	112.7
36 Poncha Pass to Monte Vista via Saguache and to junction with No. 15; also Saguache over Cochetopa to junction with No. 28.....	174.0
37 Divide to Cripple Creek and Canon City; also junction with No. 5 to Westcliffe, and Silvercliff to Texas Creek.....	104.7
38 Alamosa to Creede, Lake City and Sapinero.....	151.5
39 Hot Sulphur Springs to Wolcott via State bridge.....	60.75
40 State bridge to Steamboat Springs, and branch Toponas to Kremmling.....	88.5
41 Craig to Steamboat Springs and to west line of State.....	138.0
42 Craig to Rifle via Meeker; Meeker to west joining No. 41, and Craig to north line of State.....	223.0
43 Granby to Rand and Walden, to Hebron and Rabbit Ear Pass, to junc- tion with No. 40 near Sydney.....	120.0
44 Ridgway to Placerville and Naturita, and Placerville to Telluride.....	60.0
45 Norwood via Disappointment to Cortez and Dolores to Vance Junction.....	143.0
46 Delta via Black Mesa to Sapinero.....	72.0
47 Kremmling to Breckenridge and to Fairplay.....	83.0
48 Creede to Silverton.....	62.0
49 Denver to Brighton and Greeley.....	52.0
50 Walden to north State line, and Walden to Fort Collins via Poudre.....	108.0
51 Loveland to Granby via Estes Park and Fall River.....	54.0
52 Steamboat Springs to north line.....	45.0
53 Colorado Springs easterly to junction with No. 32.....	98.0
54 Idaho Springs, Central City, Nederland to Boulder.....	43.75
55 Trinidad to Clayton, N. M.....	28.0
56 Empire to Silver Plume.....	8.3
57 From Road No. 40 at or near Kremmling to Rabbit Ear Pass Road No. 43.....	28.0
58 Golden to Central City via Guy Hill.....	19.0
59 From junction at Sec. 6-3, with No. 49 to junction with No. 7 at Hudson.....	25.5
60 South Fork Station to junction with No. 15.....	17.0
Total mileage State Primary roads.....	5,326.70

## SECONDARY ROADS

18 Denver to Colorado Springs via Cherry Creek.....	61.0
28 Holly south to south State line near east line of State.....	78.0
38 Greeley to north State line along Union Pacific Railroad.....	48.0
48 Antonita to junction with No. 15 near Stunner.....	47.0



# SKETCH MAP OF COLORADO



SCALE IN MILES

- STATE HIGHWAYS-PRIMARY
- STATE HIGHWAYS-SECONDARY
- ADVISORY BOARD DISTRICTS

MAP ISSUED BY STATE HIGHWAY COMMISSION  
DECEMBER, 1914

COLORADO-OKLAHOMA LINE  
COLORADO-NEBRASKA LINE  
COLORADO-KANSAS LINE  
COLORADO-NEW MEXICO LINE





48 Antonita to junction with No. 15 near Stunner..... 47.0

Road No.	Distance Miles
5S Yuma to Stratton.	80.0
6S Wray to Burlington via Idalia.	58.0
7S Pueblo to Silvercliff via Beulah.	45.0
8S Pueblo to junction with No. 37 via Greenwood	26.0
9S Burlington to Cheyenne Wells.	37.75
10S Alamosa via Mosca, Hooper, and Center to Primary Road No. 36	35.0
<hr/>	
Total mileage State Secondary roads.	515.75
<hr/>	
Total mileage of all State roads	5,842.45

## RECEIPTS FROM THE MOTOR VEHICLE LICENSE TAX FOR 1913 AND 1914,

WERE AS FOLLOWS.

(From Secretary of State's Office.)

1913.

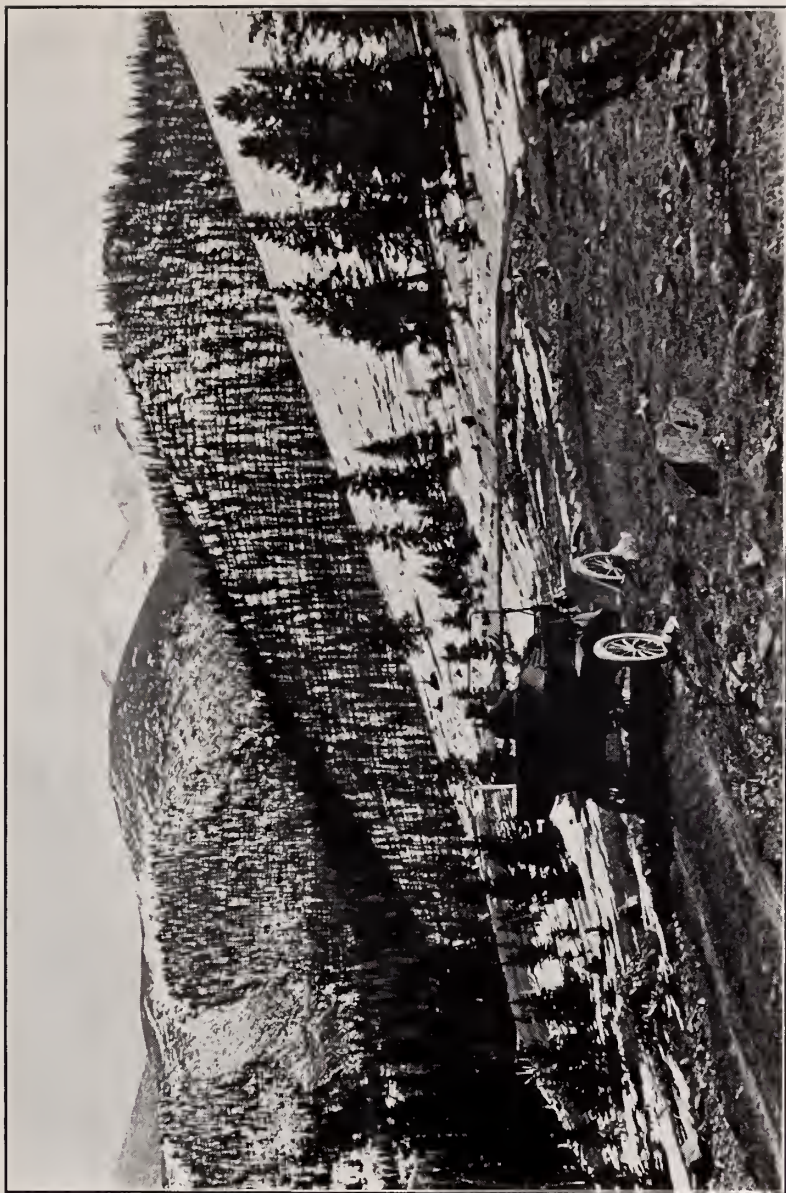
COUNTIES	Automobiles				License		Expense of
	Reissues	Owners and Dealers	Motorcycles	Drivers	Receipts	Collection	
Adams.....		109	36	3	\$ 507.50	\$	28.18
Arapahoe.....		140	35	20	610.00		38.43
Archuleta.....		21	...		75.00		7.73
Alamosa.....			...				
Baca.....		18	4	2	60.00		8.22
Bent.....		116	18	19	480.00		39.22
Boulder.....	6	548	137	73	510.00		197.25
Chaffee.....	1	119	8	15	511.50		41.69
Cheyenne.....		33	1		144.50		10.44
Clear Creek.....		33	6	3	140.00		10.88
Conejos.....	1	128	44	21	569.50		48.80
Costilla.....		50	10	3	233.00		13.51
Crowley.....		91	6	5	367.00		25.30
Custer.....		22	...		90.00		8.03
Delta.....		159	18	31	692.00		79.91
Denver.....	55	4,968	1,013	1,118	22,953.50		1,636.54
Dolores.....		...	...		...		...
Douglas.....	52	52	5	6	196.00		17.65
Eagle.....		17	1	1	70.50		6.15
Elbert.....		48	3		166.00		14.75
El Paso.....	13	1,018	313	161	5,058.50		293.69
Fremont.....	1	301	54	20	1,241.00		84.02
Garfield.....		97	7	13	374.50		27.80
Gilpin.....		2	3		13.50		1.85
Grand.....		20	...		70.00		7.11
Gunnison.....		48	2	3	194.50		16.27
Hinsdale.....		4			10.00		1.62
Huerfano.....	1	83	15	4	364.50		22.92
Jackson.....		14	...	4	64.00		6.20
Jefferson.....	1	158	26	11	638.50		42.36
Kiowa.....		47	6	1	178.00		13.98
Kit Carson.....		80	4	5	273.00		25.15
Lake.....		37	14	2	200.00		13.55
La Plata.....	1	85	7	16	375.50		25.28

## 1913.

COUNTIES	Automobiles Owners and				License	Expense of
	Reissues	Dealers	Motorcycles	Drivers	Receipts	Collection
Larimer, . . .	9	779	169	46	\$ 3,393.50	\$ 208.73
Las Animas	1	256	22	45	1,104.50	78.22
Lincoln . . .		79	2	11	321.00	23.28
Logan, . . .		247	28	21	1,084.50	69.37
Mesa		215	52	13	987.50	72.01
Mineral		7	4	1	36.50	3.63
Moffat		18		2	82.00	6.15
Montezuma		48	2	13	179.50	17.73
Montrose	1	141	20	16	516.50	42.67
Morgan, . . .		211	42	5	951.50	54.99
Otero, . . . .		369	110	31	1,658.50	107.88
Ouray, . . .		19	5		62.50	6.21
Park		55	4	5	243.00	18.60
Phillips	4	103	4	13	405.50	40.39
Pitkin, . . .		14	1		67.00	4.66
Prowers, . . .	2	176	52	18	740.50	69.85
Pueblo, . . .	1	600	98	33	2,599.50	194.94
Rio Blanco		13		5	57.50	5.92
Rio Grande, . . .		182	11	13	750.00	63.22
Routt, . . . .		45		3	168.00	15.51
Saguache, . . .		105	7	6	392.50	32.75
San Juan		2			7.50	1.00
San Miguel		13			47.50	4.05
Sedgwick	1	88	6	5	312.50	24.99
Summit, . . .		11	4	2	40.00	4.56
Teller		135	52	41	792.50	45.01
Washington, . . .		82	7	4	298.00	25.65
Weld, . . . .	5	800	248	52	3,588.00	214.15
Yuma		145	4	16	514.00	40.99
Totals	105	13,624	2,753	1,980	\$60,833.00	\$ 4,313.80

## 1914.

COUNTIES	Automobiles				License		Expense of	
	Owners and				Receipts		Collection	
	Reissues	Dealers	Motorcycles	Drivers				
Adams.....	5	201	58	6	\$ 892.00	\$	44.19	
Alamosa...	..	133	16	17	506.50		17.73	
Arapahoe...	3	210	64	22	874.00		32.80	
Archuleta...	..	24	1	8	102.50		7.22	
Baca.....	..	37	7	3	122.00		5.23	
Bent.....	2	183	37	42	764.50		33.17	
Boulder.....	21	781	166	69	3,329.00		119.41	
Chaffee....	4	189	10	17	774.00		28.31	
Cheyenne....	..	36	1	..	134.50		10.51	
Clear Creek	1	49	13	5	229.00		7.31	
Conejos ....	1	79	20	13	313.50		16.39	
Costilla....	..	37	12	3	187.00		12.13	
Crowley...	1	110	13	3	424.50		20.58	
Custer.....	..	32	..	..	125.00		4.58	
Delta.....	..	203	31	23	842.50		40.67	
Denver....	233	6,120	1,313	1,074	27,881.00		1,355.65	
Dolores....	..	..	1	..	2.00		..	
Douglas...	1	78	8	6	290.00		11.78	
Eagle.....	1	45	2	1	178.00		5.09	
Elbert....	1	78	3	..	261.50		10.27	
El Paso...	48	1,441	447	201	6,934.00		246.10	
Fremont...	13	389	80	15	1,613.00		73.79	
Garfield...	..	167	10	18	625.50		23.21	
Gilpin....	..	2	1	..	9.50		1.31	
Grand....	..	38	1	1	133.00		5.07	
Gunnison...	..	84	1	2	344.00		12.20	
Hinsdale...	..	4	..	..	10.00		.77	
Huerfano...	..	113	16	9	478.50		18.73	
Jackson...	..	22	2	3	92.00		4.56	
Jefferson...	9	242	43	9	947.00		35.76	
Kiowa...	1	67	3	5	222.50		10.46	
Kit Carson...	..	103	3	7	335.50		17.02	
Lake.....	..	73	14	6	344.00		8.99	
La Plata...	..	121	8	34	547.50		21.56	
Larimer...	45	1,025	236	43	4,505.00		175.13	
Las Animas	4	334	15	27	1,364.00		64.76	
Lincoln ...	1	97	4	12	390.50		26.54	



TOP OF MONARCH PASS (ALTITUDE 11,500 FEET)—RAINBOW ROUTE—NEAR SALIDA, COLORADO.  
CHAFFEE COUNTY—STATE PRIMARY ROAD NO. 28.





## 1914.

COUNTIES	Automobiles				License Receipts	Expense of Collection
	Reissues	Owners and Dealers	Motorcycles	Drivers		
Logan.	5	331	38	20	\$ 1,368.50	\$ 51.66
Mesa.	6	316	88	16	1,437.50	39.56
Mineral.		8	3	2	35.50	2.11
Moffat.		30		4	111.50	5.03
Montezuma		69	3	15	263.50	14.88
Montrose	3	205	27	14	742.00	34.47
Morgan.	5	276	50	2	1,197.00	45.96
Otero.	2	458	104	35	1,974.00	85.09
Ouray.	2	36	8		132.00	5.03
Park.		60	5	4	264.00	12.25
Phillips.	5	162	5	11	618.50	27.05
Pitkin.		17			65.00	3.78
Prowers	8	219	51	13	884.00	39.62
Pueblo.	9	1,014	258	54	4,409.50	164.98
Rio Blanco.		38		5	142.50	10.88
Rio Grande		199	11	3	780.00	44.57
Routt.		48		3	190.50	11.29
Saguache.	2	127	8	11	473.00	24.81
San Juan		3	1		12.00	0.98
San Miguel.		30			102.50	4.57
Sedgwick.	1	103	11	5	365.00	19.58
Summit.		13	5	1	48.50	3.73
Teller.	2	214	30	47	1,028.00	34.95
Washington.	5	113	10	3	400.50	18.59
Weld.	27	1,170	302	63	5,055.50	173.13
Yuma	5	228	5	23	788.00	33.06
Total—1914	482	18,433	3,683	2,058	\$80,047.00	\$ 3,440.59
Total—1913	105	13,624	2,753	1,980	\$60,833.00	\$ 4,313.80

## TOTAL FOR 1913 AND 1914

	1913	1914	1913 and 1914
Total receipts.	\$ 60,833.00	\$ 80,047.00	\$ 140,880.00
Expense of collection.	4,313.80	3,440.59	7,754.39
Available for road work	\$ 56,519.20	\$ 76,606.41	\$ 133,125.61

One-half of this sum goes to the county in which it is collected, and the other half to the State Road Fund.

## FOREST RESERVE FUNDS.

Twenty-five per cent of the receipts from Forest Reserves are turned over to the State by the National Government, and distributed pro rata, according to the acreage of forest reserve in each county. This money is divided by the County Commissioners between the School Fund and the Road Fund, but at least 5% must go to the schools. We have no information as to the exact division of this fund between the schools and roads.

	1913	1914
Adams.....		
Arapahoe.....		
Archuleta.....	\$ 2,815.89	\$ 2,741.48
Alamosa.....		
Boulder.....	191.87	239.90
Baca.....		
Bent.....		
Clear Creek.....	338.56	390.22
Chaffee.....	1,776.67	1,597.74
Cheyenne.....		
Custer.....	294.25	321.80
Crowley.....		
Costilla.....	46.36	50.70
Conejos.....	1,379.35	1,374.00
Douglas.....	359.72	414.61
Dolores.....	1,526.45	2,097.48
Delta.....	896.95	924.44
El Paso.....	283.54	326.81
Elbert.....		
Eagle.....	3,669.12	3,787.76
Fremont.....	107.90	118.00
Gilpin.....	88.90	102.43
Gunnison.....	3,863.98	3,408.26
Grand.....	4,064.81	3,080.02
Garfield.....	2,149.99	2,220.52
Huerfano.....	274.63	300.40
Hinsdale.....	2,412.08	2,422.66
Jefferson.....	211.60	243.90
Jackson.....	2,253.08	2,428.05
Kit Carson.....		
Kiowa.....		
Larimer.....	727.31	970.97
Logan.....		

	1913	1914
Lincoln.....		
Lake.....	\$ 600.00	\$ 536.26
Las Animas.....	40.06	43.80
La Plata.....	1,128.42	1,674.32
Morgan.....		
Montrose.....	1,426.36	1,379.03
Montezuma.....	1,230.01	1,690.22
Moffat.....	309.87	324.99
Mineral.....	2,667.95	2,637.43
Mesa.....	2,333.63	2,347.57
Otero.....		
Ouray.....	605.46	598.51
Phillips.....		
Park.....	1,878.38	1,974.93
Pueblo.....	65.40	71.53
Prowers.....		
Pitkin.....	1,876.71	2,111.73
Rio Grande.....	1,158.42	1,153.65
Rio Blanco.....	1,431.68	1,483.55
Routt.....	2,641.37	2,771.73
Sedgwick.....		
San Miguel.....	903.04	1,203.20
San Juan.....	422.76	606.10
Saguache.....	2,760.02	2,569.92
Summit.....	1,435.00	1,283.45
Teller.....	275.09	317.08
Washington.....		
Weld.....		
Yuma.....		
Total.....	\$ 54,922.64	\$ 56,340.42

The Forest Reserves in the various counties, and the area and earnings for 1913, are as follows:

Reserve	Earnings	County	Aeres	Amount Per Acre Apportionment
Arapahoe.....	\$ 5,030.34	Grand.....	565,440	.0066237 \$ 3,745.30
		Jackson.....	194,000	1,285.04
Battlement.....	2,812.53	Delta.....	206,980	.0041523 859.43
		Garfield.....	48,000	199.32
		Gunnison.....	95,760	397.64
		Mesa.....	326,000	1,356.14

Reserve	Earnings	County	Acres	Amount	
				Per Acre	Apportionment
Cochetopa	\$ 3,136.47	Chaffee...	89,920	.0033717	\$ 303.18
		Gunnison...	32,640		110.10
		Hinsdale...	115,340		388.89
		Saguache...	692,320		2,334.30
Colorado	889.82	Boulder...	78,600	.0013101	102.97
		Jackson...	45,440		59.54
		Larimer...	555,160		727.31
Durango	1,601.02	Archuleta...	5,400	.0022741	12.34
		Hinsdale...	61,596		140.07
		La Plata...	473,980		1,077.88
		San Juan...	163,024		370.73
Gunnison	2,711.73	Delta...	20,500	.0028825	37.51
		Gunnison...	917,810		2,645.12
		Montrose...	13,000		59.10
Hayden	460.70	Jackson...	75,700		460.70
Holy Cross	3,597.84	Eagle...	546,820	.00594	3,248.10
		Garfield...	49,920		296.52
		Pitkin...	8,960		53.22
La Salle	157.05	Mesa...	7,500	.0051495	38.60
		Montrose...	23,000		118.45
Leadville	4,223.16	Chaffee...	364,080	.0039964	1,455.00
		Grand...	2,000		8.00
		Lake...	150,000		600.00
		Park...	181,440		725.16
		Summit...	359,000		1,435.00
Montezuma	3,593.20	Dolores...	345,000	.0044245	1,526.45
		La Plata...	7,100		31.49
		Montezuma...	278,000		1,230.01
		San Miguel...	182,000		805.25

Reserve	Earnings	County	Acres	Amount	
				Per Acre	Apportionment
Pike.....	\$ 2,799.53	Boulder...	42,000	.002116	\$ 88.90
		Clear Creek ..	160,000		338.56
		Douglas .....	170,000		359.72
		El Paso.....	134,000		283.54
		Gilpin.....	42,000		88.90
		Jefferson.....	100,000		211.60
		Park.....	545,000		1,153.22
		Teller...	130,000		275.09
Rio Grande...	5,615.41	Conejos.....	300,000	.0045978	1,379.35
		Hinsdale.....	225,000		1,034.51
		Mineral.....	401,000		1,843.75
		Rio Grande...	250,000		1,149.50
		Saguache...	45,300		208.30
Routt.....	3,645.03	Grand.....	80,000	.0038938	311.51
		Jackson.....	115,000		447.80
		Moffat.....	76,100		296.33
		Routt...	665,000		2,589.39
San Isabel	1,064.51	Chaffee.....	11,300	.0016346	18.49
		Costilla.....	28,350		46.36
		Custer.....	180,000		294.25
		Fremont.....	66,000		107.90
		Huerfano.....	168,000		274.63
		Las Animas.....	24,500		40.06
		Pueblo.....	40,000		65.40
		Saguache...	133,050		217.42
San Juan	4,250.57	Archuleta...	491,385	.0057054	2,803.55
		Hinsdale...	104,260		594.85
		La Plata...	3,355		19.05
		Mineral.....	144,460		824.20
		Rio Grande...	1,560		8.92
Sopris	2,378.16	Eagle.....	87,500	.0036252	317.21
		Gunnison...	65,500		237.46
		Pitkin.....	503,000		1,823.49
Uncompahgre	3,670.42	Gunnison...	112,000	.0042292	473.68
		Hinsdale.....	60,000		253.76
		Mesa.....	222,000		938.89

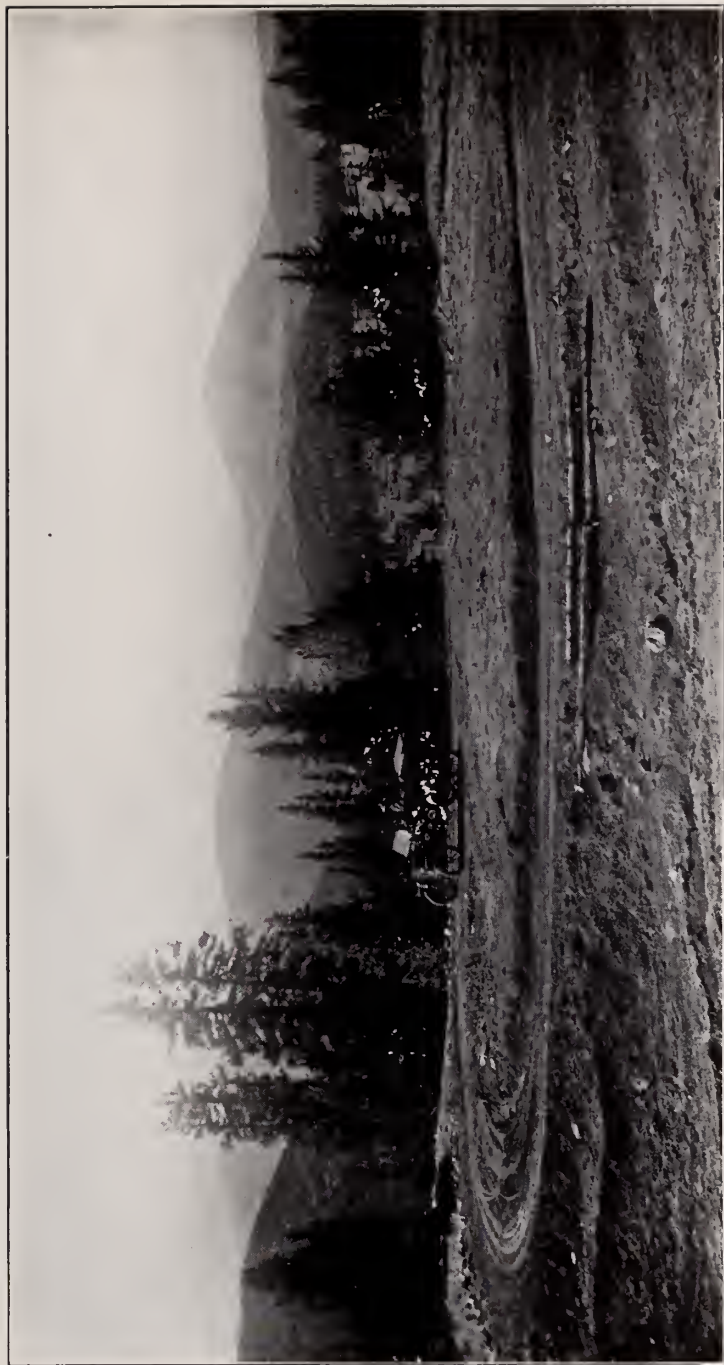
				Amount	
Reserve	Earnings	County	Acres	Per Acre	Apportionment
Uncompahgre— (Concluded)		Montrose.....	295,280		\$ 1,248.81
		Ouray.....	143,160		605.46
		San Miguel.....	23,120		97.79
		San Juan.....	12,300		52.03
White River.....	\$ 3,255.15	Eagle.....	28,000	.0037075	103.81
		Garfield.....	446,160		1,654.14
		Moffat.....	3,649		13.54
		Rio Blanco.....	386,160		1,431.68
		Routt.....	14,021		51.98
	\$54,922.64		14,559,480		\$ 54,922.64

## FOREST RESERVE—ADDITIONAL 10% FUND.

In addition to the twenty-five per cent, there is spent 10% of the receipts expended by the Forestry Department on roads through the Forest Reserves. During 1913 and 1914 this fund was expended in the following counties by the U. S. officials, and on the projects as given in the table; all of these projects are on the State road system, except those in the Battlement, Durango, and Uncompahgre Forests.

(BY COURTESY OF MR. SMITH RILEY, DISTRICT FORESTER)

Forest	County	Project	Disbursements		Total
			1913	1914	1913 and 1914
Arapahoe.....	Grand.....	Berthoud Pass.....	\$ 1,285.64		\$ 1,285.64
Pike.....	Clear Creek.....	Berthoud Pass.....	3,569.82		3,569.82
Battlement.....	Garfield.....	Garfield-Buzzard Cr.....	674.65		674.65
	Mesa.....	Grand Mesa.....		1,825.00	1,825.00
Cochetopa.....	Saguache.....	Cochetopa Pass.....	3,500.04	6,160.83	9,660.87
Durango.....	La Plata.....	Oro Fino.....	4,905.53		4,905.53
Gunnison.....	Gunnison.....	Black Mesa.....	934.96	65.00	999.96
Holy Cross.....	Eagle.....	Tennessee Pass.....	995.07	4.93	1,000.00
Leadville.....	Lake.....	Tennessee Pass.....	1,163.38		1,163.38
Montezuma.....	Dolores.....	Dolores River.....	47.44	4,785.88	4,833.32
Routt.....	Routt.....	Rabbit Ear.....	5,938.79	5,759.73	11,698.52
San Isabel.....	Custer.....	Hardscrabble.....	4,954.83	1,656.19	6,611.02
San Juan.....	Hinsdale.....	Alamosa-Durango.....	3,689.82	25.00	3,714.82
Sopris.....	Pitkin.....	Independence Pass.....	1,999.96		1,999.96
Uncompahgre.....	Mesa.....	25-Mesa.....		780.62	780.62
	Montrose.....	Paradox-Montrose.....	757.88		757.88
Total.....			\$34,417.81	\$21,063.18	\$55,480.99



TOMICHI DOME, LOOKING WEST FROM TOP OF MONARCH PASS—RAINBOW ROUTE—NEAR SALIDA, COLORADO. GUN-  
NISON COUNTY—STATE PRIMARY ROAD NO. 28.





## ROAD OVERSEERS.

A law was passed by the last Legislature, permitting the County Commissioners to appoint a competent man as General Overseer or Superintendent for all roads and bridges, and having all work done under his supervision and direction; this general overseer to act under the direction of the Board of County Commissioners. El Paso, Pueblo, Jefferson and Mesa Counties are the only counties who have appointed a General Overseer.

The following table gives the number of overseers for each county, as far as replies were received by this office. In counties where no general overseer is appointed, the District Overseers are under the immediate direction of the County Commissioner of that district.

COUNTY	General Road	Number of
	Overseer	Road Overseers
Adams...	No	4
Arapahoe	No	2
Archuleta	No	3
Alamosa	No	
Boulder	No	22
Baca	No	3
Bent	No	7
Clear Creek	No	
Chaffee	No	
Cheyenne	No	3
Custer	No	6
Crowley	No	3
Costilla	No	3
Conejos	No	1
Douglas	No	16
Dolores	No	2
Delta	No	
El Paso	Yes	1
Elbert	No	18
Eagle	No	16
Fremont	No	10
Gilpin	No	
Gunnison	No	3
Grand	No	
Garfield	No	3
Huerfano	No	
Hinsdale	No	
Jefferson	Yes	18

COUNTY	General Road	Number of
	Overseer	Road Overseers
Jackson.	No	2
Kit Carson	No	15
Kiowa	No	3
Larimer.	No	24
Logan	No	
Lincoln	No	13
Lake.	No	2
Las Animas	No	3
La Plata.	No	
Morgan.	No	15
Montrose.	No	13
Montezuma.	No	3
Moffat.	No	8
Mineral.	No	1
Mesa.	Yes	17
Otero.	No	
Ouray.	No	3
Phillips.	No	6
Park.	No	7
Pueblo.	Yes	1
Prowers	No	6
Pitkin.	No	11
Rio Grande	No	6
Rio Blanco.	No	3
Routt.	No	11
Sedgwick	No	8
San Miguel	No	9
San Juan.	No	2
Saguache.	No	
Summit.	No	1
Teller	No	4
Washington	No	(36 road districts)
Weld.	No	6
Yuma.	No	14
	<hr/>	<hr/>
62 Counties	4	397



PIKE'S PEAK ROAD, EAST OF COLORADO SPRINGS, EL PASO COUNTY—STATE PRIMARY ROAD NO. 30.



## CAMPING SITES.

A general letter was sent to ninety (90) cities and towns of the State, inquiring as to what provision, if any, had been made for a camping site for touring visitors. In reply, the officials of the following cities and towns stated that they have provided a site for camping parties.

CITY OR TOWN	COUNTY	
Holyoke .	Phillips . . .	See Mayor or Clerk
Brush,	Morgan.....	City Park or see Clerk
Fort Morgan	Morgan.....	City Park or see Clerk
Greeley...	Weld. . . .	Inland Grove Park
Castle Rock..	Douglas...	.....
Cheyenne Wells	Cheyenne.....	See Mayor
Colorado Springs	El Paso . . .	Prospect Lake
Pueblo.. . . .	Pueblo	Fairmount Park
Salida	Chaffee . . .	Old Race Track Grounds
Alamosa...	Alamosa.. .	See Mayor or Clerk
Pagosa Springs.	Archuleta ..	See Town Clerk
Creede.	Mineral...	Along Rio Grande River
Lake City...	Hinsdale .	.....
Ouray....	Ouray.....	See City Clerk
Cortez.....	Montezuma...	See Mayor or Clerk
Montrose..	Montrose...	See Mayor or Clerk
Rifle.....	Garfield.....	See Mayor or Clerk
Steamboat Springs	Routt.....	See Mayor or City Clerk

The National Forest Reserves are also open to campers, under reasonable regulations, regarding camp fires and pollution of streams.

## TRAFFIC CENSUS.

Letters were sent to the various commercial bodies of the State, asking their co-operation in obtaining a census of the traffic on the principal roads leading into their towns. The following data has been received up to date. This line of inquiry is important, and will be continued. Time of observation not given, but assumed as 10 hours.

## LEADVILLE — LAKE COUNTY

(By Joseph W. Clark, Leadville, Colorado)

Vehicles passing Durning Ranch, Tennessee Park, north of Leadville on State Highway No. 10

		4-Horse	2-Horse	1-Horse		
1911	Automobiles	Teams	Teams		Bicycles	Total
July 3	11		7	15	1	34
4	13		6	10		59
5	15		8	14	2	39
6	7		5	9		21
7	8	2	4	17	2	33
8	6		6	11		23
9	7		2	8	2	19
10	4		5	17		26
11	8		6	6	2	22
12	11		1	26		41
13	3		4	5		12
14	7		7	17		31
15	3		5	3		11
16	13		1	5		19
17	4		5	5	4	15
18	1		2	8		14
19	6		4	20		30
20	5		6	6		17
21	11		2	5		18
22	4		5	8		17
23	12		2	16		30
24	6		5	9		20
25	7		8	15		30
26	12		8	26	1	50
27	12		4	11	1	28
28			4	9		13
29	9		9	13	6	37
30	7		6	14		27
31	12		9	11		33
Total	227	2	149	369	21	768



DURANGO-SILVERTON ROAD, SAN JUAN COUNTY—STATE PRIMARY  
ROAD NO. 13.





## PUEBLO, PUEBLO COUNTY

(By J. H. Jenkins, Pueblo, Colorado, Secretary Commercial Club)

All for Sunday, April 30, 1913 (assumed as 10 hours). Road Pueblo east, State Road No. 5

	Automobiles	2-Horse Teams	Motor- cycles	Bicycles	Total
Both ways, . . . . .	256	519	120	67	962
N. & S. road, State Road No. 26					
both ways . . . . .	73	50	32		155
Beulah road, State Road No. 78,					
both ways . . . . .	94	60	26	20	200
Colorado Springs road, State					
Road No. 4, both ways . . . .	232	21	49		302
Canon City road, State Road No.					
5, both ways. . . . .	86	3	13		102

## LONGMONT, BOULDER COUNTY

(By D. W. Thomas, Secretary Commercial Association, Longmont)

Longmont-Denver Road, State Road No. 2: . . . .

	Automobile	2-Horse Team	1-Horse	Motor- cycles	Bicycles	Threshing Machine	Total
Wednesday							
Aug. 20, 1913 . . . . .	107	76	90	4	7	1	215
Saturday							
Aug. 30, 1913 . . . . .	126	57	94	11	20		311
Saturday							
Sept. 13, 1913 . . . . .	93	64	100	3	21		281
Longmont-Lovesand Road, State Road No. 2:							
Saturday							
Aug. 23, 1913 . . . . .	151	105	124	25			405
Wednesday							
Aug. 27, 1913 . . . . .	109	125	110	13	16		373
Saturday							
Sept. 6, 1913 . . . . .	127	62	125	17	16		347
Saturday							
Sept. 20, 1913 . . . . .	98	66	103	12	13		292

## MONTROSE, MONTROSE COUNTY

(By Lynn Monroe, Secretary Chamber of Commerce, Montrose)

Time—8 A. M. to 6 P. M.

Saturday, June, 1913

At Main St. Bridge on State Roads Nos. 13 and 20

	1-Horse	2-Horse				
Automobiles	Teams	Teams	1-Horse	Motoreycles	Bicycles	Total
61	12	171	230	12	38	524

Road to Delta, State Road No. 12:

17		41	65	1	2	126
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Blue Mesa Road, State Road No. 20, at Cimarron, Colo.:

(By R. M. Wright, Cimarron, Colo.)

July 8 to August 1, 1913—10 hours per day

## Automobiles

July 8	4
9	17
10	9
11	4
12	4
13	4
14	2
15	2
16	7
20	6
21	6
22	7
23	3
24	4
25	9
26	6
27	3
29	5
30	3
31	4
Total.	109

No record kept of other class of traffic

## LITTLETON, ARAPAHOE COUNTY

(By John Maloney, Sunday, December 17, 1912)

Weather clear—roads good

Denver-Colorado Springs Road, State Road No. 3

2-Horse

	Automobiles	Teams	1-Horse	Motorcycles	Bicycles	Total
10 to 12 A. M.	14	10	4	6		34
2 to 4 P. M.	18	10	5	4		37
	32	20	9	10		71

(By John and Catherine Maloney, Sunday, April 20, 1913)

Weather clear—roads fair

10 to 12 A. M.	53	5	5	8		69
2 to 4 P. M.	326	40	21	51		438
	379	45	24	59		507

Sunday, May 4, 1913

Weather clear—roads good

8 to 12:30 A. M.	135	40	20	40	Not taken	235
12:30 to 6:30 P. M.	445	64	32	147	do	688
	580	104	52	187		923

Sunday, July 23, 1913

Weather clear—roads good

10 to 12 A. M.	100	40	20	25	Not taken	185
3:45 to 6:45 P. M.	100	30	10	20	do	160
	200	70	30	45		345

Sunday, Nov. 16, 1913

Weather clear—roads good

2 to 5 P. M.	252	12	6	25	Not taken	295
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## AURORA, ADAMS COUNTY

(By Dr. F. L. Bartlett, Denver, December 17, 1912)

Limon and Denver-Ft. Morgan Road, State Road No. 7

	Automobiles
3 to 4 P. M.	180

Other vehicles not taken.

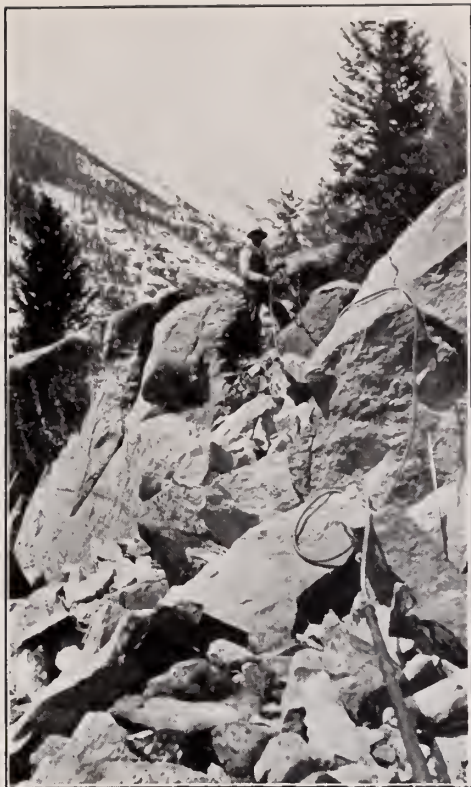
## WATKINS, ADAMS COUNTY

(By E. E. Montgomery, Littleton, Colo.)

Denver-Limon and Ft. Morgan Road, State Road No. 7.

1910		Automobiles	2-Horse Teams	Motorcycles	Total
Oct	10, P. M.		4		4
	11, A. M.	2	1		3
	17, P. M.	4	6	1	11
	18, all day	7	9		16
	20, all day	4	8		12
	25, P. M.		4		4
	26, all day	6	6		12
	31, P. M.	3	2	1	6
Nov.	4, all day	4	13		17
	5, all P. M.	1	3	1	5
		—	—	—	—
		31	56	3	90

These fragmentary observations are published so as to serve as a beginning for a complete record for every section of the State. The records should show separately 6-horse, 4-horse, 2-horse teams, and single horses, automobiles, motorcycles, bicycles, threshing and roller engines; weather conditions and road conditions. It is hoped to be able to make a complete record of all the principal roads of the State, and to show the traffic in tons per foot of width per hour.



PORTABLE AIR COMPRESSOR AND DRILLING WORK ON FALL RIVER  
ROAD, LARIMER COUNTY (CONVICT WORK)—STATE  
PRIMARY ROAD NO. 51.



## WIDTH OF TIRES.

This question of wide tires has been discussed a great deal, particularly in reference to the effect of narrow tires upon the road surface, but there is also the question of tractive resistance to be considered.

These notes are recorded here so that information bearing on this question might be available in convenient form. In regard to tractive resistance of broad and narrow tires the following experiments are instructive.

TRACTION RESISTANCE OF BROAD AND NARROW TIRES IN POUNDS  
PER TON OF 2,000 LBS.\*

(Bulletin No. 39, July, 1897, Missouri Agricultural Station)

Ref.		Width of Tires		No. of
No.	Description of Road Surface	1½ in.	6 in	Trains
Broken Stone Road:				
1	Hard, smooth, no dust, no loose stones, nearly level	121	98	2
Gravel Roads:				
2	Hard and smooth, few loose stones, size of walnuts	182	134	2
3	Hard, no ruts, large quantity of sand which prevents packing	239	157	1
4	New gravel, not compact, dry	330	260	1
5	Wet, loose sand, 1" to 2½" deep	246	254	2
Earth Roads:				
6	Loam, dry, loose, dust 2" to 3" deep	90	106	2
7	Loam, dry, hard, no ruts, no dust, nearly level	149	109	3
8	Loam, stiff mud, drying on top, spongy below	497	307	1
9	Loam, mud 2½" deep, very sticky, firm below	251	325	1
10	Clay, sloppy mud, 3" to 4" deep, hard below	286	406	1
11	Clay, dry on top, but spongy below, narrow tires cut in 6" to 8"	472	422	2
12	Clay, dry on top, but spongy below	618	464	5
13	Clay, stiff, deep mud	825	551	1
Mowing Land:				
14	Timothy sod, dry, firm, smooth, narrow tires cut in 1"	317	229	1
15	Timothy sod, moist, narrow tires cut in 3½"	421	305	1
16	Timothy sod, soft and spongy, grass and stubs 3" high, narrow tires cut in 6"	569	327	1
Pasture Land:				
17	Blue grass sod, dry, firm, smooth	218	156	2
18	Blue grass sod, soft, narrow tires cut in 3"	420	273	2
19	Blue grass sod, narrow tires cut in 4"	578	436	1

\*From Baker's "Roads and Pavements."

Ret No.	Description of Road Surface	Width of Tires		No. of Trials
		1½ in	6 in	
	Stubble Land.			
20	Corn stubble, no weeds, nearly dry enough to plow	631	118	2
21	Corn stubble, some weeds and stalks, dry enough to plow	423	362	1
22	Corn stubble, in autumn, dry and firm.	404	256	2
23	Plowed land, freshly plowed, not harrowed, surface rough.	519	283	1
24	Plowed land, freshly plowed, harrowed, smooth and compact	466	323	1

It is to be noted that only in the deep, sticky, clay mud or dust was the resistance of the narrow tire equal to or less than the 6-inch tire; for every other condition the 6-inch tire offered the least resistance.

Morrison, in his "Highway Engineering," has the following, based upon the foregoing experiments:

	No. of Trials	Load Hauled on 6" Tire	Load Hauled on 1½" Tire
Macadam Road	2	2,518 lbs.	2,000 lbs.
Gravel Road	6	2,482 lbs.	2,000 lbs.
Dirt Road:			
(Except when very muddy or very dusty)		2,530 lbs.	2,000 lbs.
(When dry on top and spongy below).....		3,200 lbs.	2,000 lbs.

"On clay road, dry surface, with deep ruts cut by narrow tires in the ordinary use of the road. In every trial, the first run of the broad tire showed materially increased draught when compared to the narrow tire run in its own rut. The second run of the broad tire completely eliminated this disadvantage, and showed a lighter draught for the broad tire than the narrow tire showed in the first run.

"It appears that six inches is the best width for a combination farm and road wagon, and that both axles should be the same length, so that front and hind wheels will run in the same track.

"It is therefore evident that wide tires not only tend to diminish the draught under most conditions, but that they also aid in the preservation of the road surface.

"An Act of the N. J. Legislature dated March 24, 1896, permits township committees to pass an ordinance allowing a rebate of taxes to owners or possessors of wagons or carts with tires not less than 4 inches in width."

In "Roads and Pavements" by F. P. Spaulding (1908):

"Narrow tires have a much more destructive effect upon a road surface than wide tires, and from the point of view of road maintenance, wide tires are very desirable.





COLORADO SPRINGS-PUEBLO ROAD, EL PASO COUNTY—FORM WORK FOR CONCRETE ARCH AT BUTTES, OVER  
FOUNTAIN CREEK—STATE PRIMARY ROAD NO. 4.



"The concentration of a heavy load upon narrow wheel tires affords very little surface of contact between the wheel and road, and causes the wheel to indent the road surface, giving a powerful cutting action. The same load on a tire of sufficient width would tend to compact the road, acting like a roller. \* \* \*

"The general introduction of wide tires upon vehicles traveling over highways would greatly simplify the problem of road maintenance, particularly upon earth roads.

"The usual width of tire upon ordinary wagons is  $1\frac{1}{2}$ " or  $1\frac{3}{4}$ ". For the best effect upon the highways, these should be increased so as to vary from about 3 to 5 or 6 inches, according to the load for which the wagon is designed."

EFFECT OF WIDTH OF TIRE UPON TRACTIVE POWER  
RESISTANCES IN POUNDS PER TON\*

Ref. No.	Description of the Road Surface	Diameters of the Front and Rear Wheels, Respectively									
		3' 6" and 3' 10"		3' 6" and 3' 10"		3' 8" and 4' 6"		3' 6" and 3' 10"		3' 8" and 4' 6"	
		Width of Tire									
		1½"	4"	1½"	4"	1½"	4"	1½"	3"	1¾"	3"
1	Sod . . . . .							283	239	189	228
2	Earth roads, hard. . . . .		108	...	...			152	152	114	114
3	Earth roads, muddy . . . . .		243	268	304	236	254			265	228
4	Sand road, hard. . . . .	199	162	171	164	141	168				
5	Sand road, deep. . . . .	371	351								
6	Gravel road, good . . . . .			98	117	83	80			66	76
7	Wood block, round . . . . .	51	49	61	70	35	46		54	28	38

\*From Baker's "Roads and Pavements." Proc. of Inst. of Mechanical Engineers (London) 1890, Part No. 2, p. 195 Pamphlet by Studebaker Bros. Manufacturing Co., South Bend, Ind., 1892.

Baker, in "Roads and Pavements," 188 and 189:

"It is desirable that a wagon in passing over the road should help to make or preserve it, and not to destroy it; and therefore as far as the road is concerned within reasonable limits, the broader the tire, the better."

"In England for one hundred years the law required one inch of tire for each 500 lbs of load, but all laws regulating width of tires have been repealed.

"The Massachusetts Highway Commission (1893) says: 'It is a matter of doubtful expediency to endeavor, in the present State of our Highways, by general legislation to control the width of tires or the diameter of wheels.'

"It is probably best to leave the matter to private individuals, and the enterprise of manufacturers.

"According to wagon manufacturers (1903) about 60% of the wagons used on county roads have tires  $11\frac{1}{2}$ " to  $13\frac{1}{4}$  inches wide; those of the remaining 40% being 2 to 4 inches.

"In France, the tires of market carts vary from 3 to 10 inches in width, being generally 4 to 6 inches, with the rear axle about 14 inches longer than the forward one.

"In Bavaria the legal width is as follows:

Minimum width of tire of 2-wheel carts with 2 horses	4.13 inches
Minimum width of 2-wheeled carts with 4 horses	6.18 inches
Minimum width of 4-wheeled wagons with 2 horses	2.60 inches
Minimum width of 4-wheeled wagons with 3 or 4 horses	4.13 inches
Minimum width of 4-wheeled wagons with 5 to 8 horses	6.18 inches

The following is the legal width in Ohio:

Minimum width of tire for load of 2500 to 3500 lbs	3 inches
3500 to 4000 lbs.	$3\frac{1}{2}$ inches
4000 to 6000 lbs.	4 inches
6000 to 8000 lbs.	5 inches
8000 or more	6 inches

N. S. Shaler (Dean of Lawrence Scientific School, Harvard University, former Pres. Massachusetts Highway Commission) in "American Highways" (1896):

"The matter of width of tires has been the subject of much remark. There has, indeed, been no end of idle talk concerning this matter; much of it directed to the point that our American wagon builders have shown a lack of judgment in building with narrow tires, while they should provide their vehicles with broad treads such as are in use in Europe.

"The fact is that in this, as in many other ways in which our people have departed from ancient and old world customs, they have been led by wisdom and not by folly. This will, on a little consideration, be made evident.

"Where there is no definite pavement, as in ninety-nine hundredths of the mileage of American roads, the wheels have in muddy weather to descend into the earth, until they find a firm foundation on which to rest. In doing so they have to cleave sticky mud, which often has a depth of a foot or more. If these wheels were broad-tired, the spokes would also have to be thick

and the felloes wide, so that the aggregate holding power of the mud upon the vehicle would be perhaps twice what it is at present.

"It is useless to talk about the advantages of a broader tread to the wheels of our wagons until we have a thoroughly good system of roads, which they are intended to traverse. Any laws looking to this end would be disobeyed, because of private needs so general that they would amount to a public necessity. When the roads of a district are made good only as to main lines of communication, the side roads and farms still demand the peculiar advantages afforded by the narrow tire."

Austin T. Byrne in "Highway Construction" (1908):

"Vehicles with narrow tired wheels carrying heavy loads cause much damage, particularly on roads where they run in one track: the knife-like tire cuts into the road covering, forming ruts which each succeeding vehicle deepens; thus the cost of maintenance is considerably increased.

*"The proper width of tire, or proper load for a given width of tire is a question that deserves more attention than is usually accorded to it.*

"The best width of tire, measured when new, is shown in table.

#### DESCRIPTION OF VEHICLES

Load on Each Wheel	Two Wheels	Two Wheels	Four Wheels	Four Wheels
	Without Springs,	With Springs,	Without Springs,	With Springs,
	Inches	Inches	Inches	Inches
$\frac{1}{4}$ ton	6	3	5	3
$\frac{1}{2}$ ton	6	3	5	3
1 ton			5	3 $\frac{1}{2}$
1 $\frac{1}{2}$ ton			5	4
2 ton			6	4 $\frac{1}{2}$

"The French Commission, presided over by Morin and Deputit, recommends as maximum width of tire, 4 $\frac{3}{4}$  inches, and as minimum width 2  $\frac{3}{8}$  inches.

*"The width of tires should be established by law."*

"In June, 1892, the Studebaker Bros. Mfg. Co. of South Bend, Ind., made a series of tests, to determine the relative merits of wide and narrow tires, with regard to the resistance they offered to traction upon different road surfaces. The tests showed that the width of tire has very little effect upon the power required to move loads upon hard surfaces, such as stone blocks, hard sand, or gravel, the power required to move one ton, (2240 lbs.) being:

	1½-inch Tire	4-inch Tire
Stone blocks	168 lbs.	180 lbs.
Hard sand	383 lbs.	360 lbs.
Hard gravel	344 lbs.	311 lbs.

"Upon soft ground, such as mud, and grass sods, into which the narrow tires would cut, the wide tires have a slight advantage: (to move 2240 lbs.)

	1½-inch Tire	4-inch Tire
Soft mud	476 lbs.	412 lbs.
Sod	610 lbs.	537 lbs.

"The power to keep the load in motion after being started, was found to range from 25 to 50 per cent less than that required to start it. It was also found that less power was required to start the load when wheels of large diameter were employed."

The following table was made up to give an idea of the pressures on the road surface, for various loads on several different widths of tire, compared with the pressure per square inch of a 15 ton road roller.

PRESSURE PER SQUARE INCH OF TIRE FOR ALL FOUR WHEELS  
OF A WAGON

Width of Tire	Area per	LOADS				
	lin. Inch	2 Tons	3 Tons	4 Tons	5 Tons	6 Tons
	of Tire	Pressure per Square Inch of Tire				
1½ inch..	6 sq. in.	667	1,000	1,333	1,667	2,000
2 inch..	8 sq. in.	500	750	1,000	1,250	1 500
2½ inch..	10 sq. in.	400	600	800	1,000	1,200
3 inch..	12 sq. in.	333	500	667	833	1,000
3½ inch..	14 sq. in.	286	429	572	714	857
4 inch..	16 sq. in.	250	375	500	625	750
4½ inch..	18 sq. in.	222	334	445	555	667
5 inch..	20 sq. in.	200	300	400	500	600

A 15 ton road roller will have 20,000 lbs. on its rear wheels of 20 inches width each, equal to 40 sq. inches per lineal inch, giving a pressure on the road surface of 500 lbs. per sq. inch.

In the mountain districts of our State, on side hill roads, where it is sometimes sidling, and where there is a tendency of the wheels to slew and slip, especially, in wet and winter weather, it is a fact that narrow tires afford a better grip on the road, and lessen the chance of slewing off, but even in this case, a 2 or 2½ inch tire would be as efficient as the 1½ inch, and certainly be better on other roads, while in all except a few conditions the 5 inch tire would be better for general conditions.





ROARING FORK ROAD, PITKIN COUNTY—STATE PRIMARY ROAD  
NO. 25.



ROARING FORK ROAD, PITKIN COUNTY  
—STATE PRIMARY ROAD NO. 25, NEAR  
THE "PUNCH BOWL."





## TESTS OF ROAD MATERIAL.

Through the courtesy of Prof. Milo S. Ketchum, the use of the testing laboratory of the Engineering Department, University of Colorado, at Boulder, was offered to the State Highway Commission, together with the active co-operation of the faculty and students, for the testing of material for road surfacing, as well as for the testing of cements used in the construction work.

It is desirable that as complete information as possible be obtained as to the characteristics of our road surfacing materials, and during the coming season, County Commissioners and Road Overseers will be requested to forward samples of all available road surfacing materials to this office.

During the past season, tests of gravel from Wellington, Larimer County, and gravel from near Morrison, have been received by this office. In the various tests the maximum, minimum, and average conditions are as follows:

Hardness (loss of weight) . . .	Above 17, hard	14 to 17, medium	Below 14, soft
Toughness (No. of blows) . . .	Above 19, high	13 to 19, medium	Below 13, low
Abrasion (per cent of wear) .	14 to 20, high	8 to 13, medium	Below 8, low
Cementing value (No. of blows) . . . . .	25 to 75, high	10 to 25, medium	Below 10, low
	76 to 100, very good		

The following table of tests is published to give a general idea of the characteristics of the various rocks.

UNITED STATES DEPARTMENT OF AGRICULTURE  
OFFICE OF PUBLIC ROADS

Maximum and Minimum Results on Rock Samples, Corrected to January 1, 1910.

Division of Tests

No. of Sam- ples	NAME	Specific Gravity		Weight— Pounds per Cubic Foot		Water Absorbed —Lbs. per Cubic Foot		Per Cent of Wear		French Coeffi- cient of Wear		Hardness		Tough- ness		Cement- ing Value		NAME		
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
15	Amphibolite...	3.10	2.70	3.00	193	168	187	1.65	0.04	10.3	1.0	41.7	3.9	19.0	13.5	29	7	235	11	Amphibolite
40	Andesite.....	2.95	2.20	2.70	184	137	168	6.59	0.05	8.1	1.5	26.0	4.9	19.4	7.9	44	6	500+	11	Andesite
83	Basalt.....	3.00	2.40	2.85	187	150	178	6.32	0.04	14.7	1.3	30.4	2.7	19.2	5.9	39	6	500+	4	Basalt
48	Chert.....	2.95	2.00	2.55	184	125	159	11.10	0.26	29.2	2.7	14.6	1.4	19.7	12.7	26	5	500+	2	Chert
5	Conglomerate...	2.65	2.50	2.60	165	156	162	3.71	0.60	12.7	3.5	11.6	3.2	18.4	9.3	10	10	500+	20	Conglomerate
183	Diabase.....	3.20	2.60	2.90	200	162	181	2.73	0.03	6.3	1.1	36.4	6.4	19.4	12.3	54	4	500+	2	Diabase
57	Diorite.....	3.35	2.70	2.85	209	168	178	1.03	0.05	7.3	1.6	25.0	5.5	19.4	16.6	38	5	148	5	Diorite
140	Dolomite.....	2.90	2.30	2.75	181	143	172	9.40	0.07	18.6	1.2	33.3	2.2	18.4	1.8	27	3	179	9	Dolomite
6	Ecolite.....	3.65	2.95	3.20	228	184	200	0.28	0.10	2.9	1.8	22.7	13.8	18.7	17.4	31	14	130	10	Ecolite
6	Epidosite.....	3.30	2.70	3.00	206	168	187	1.10	0.22	7.4	2.0	19.6	5.4	19.3	10.7	23	10	83	14	Epidosite
11	Felsite.....	2.80	2.50	2.65	175	156	165	3.13	0.02	3.4	1.9	21.3	11.8							Felsite
90	Fieldstone.....							10.3	2.1	19.0	3.8							12	12	Fieldstone
36	Gabbro.....	3.65	2.75	2.95	228	172	184	0.97	0.04	5.9	1.3	30.8	6.8	18.8	16.2	23	9	115	6	Gabbro
115	Gneiss.....	3.20	2.60	2.75	200	162	172	1.24	0.02	16.4	1.7	23.0	2.4	19.3	9.0	25	2	119	1	Gneiss
168	Granite.....	3.00	2.00	2.65	187	125	165	2.77	0.04	24.6	1.1	37.0	1.6	19.6	13.6	33	2	255	2	Granite
117	Gravel.....																	500+	3	Gravel
573	Limestone.....	2.90	2.00	2.70	196	125	168	13.22	0.02	34.2	1.8	21.7	1.2	19.1	0.0	25	2	500+	10	Limestone



CONCRETE GIRDER BRIDGE OVER SAND CREEK, ADAMS AND ARAPAHOE COUNTIES—STATE PRIMARY  
ROAD NO. 7.



20	Marble	2 85	2 65	2 75	178	165	172	1 04	0 10	14 0	2 5	16 0	2 8	17 3	7 1	23	3	85	15	Marble
9	Marl																500 +	96	Marl	
19	Mixed stone								10 3		2 1	19 1	3 9							Mixed stone
5	Peridotite	3 55	2 65	2 95	221	165	184	1 02	0 27	5 3	3 0	13 2	7 6	15 0	13 3	12	9	91	25	Peridotite
78	Quartzite	3 15	2 50	2 70	196	156	168	1 89	0 05	7 6	1 6	24 5	5 3	19 7	16 5	30	5	45	0	Quartzite
35	Rhyolite	2 90	2 05	2 55	181	128	159	7 15	0 03	9 7	1 7	23 0	4 1	19 7	15 3	42	6	500 +	10	Rhyolite
244	Sandstone	3 25	2 00	2 65	203	125	165	11 60	0 02	41 7	1 0	40 8	1 0	19 5	0 0	60	2	500 +	1	Sandstone
114	Schist	3 20	2 65	2 90	200	165	181	1 35	0 06	18 2	1 3	31 7	2 2	19 0	0 9	35	3	232	5	Schist
9	Shale	2 70	2 50	2 65	168	156	165	4 84	0 50	16 2	3 2	12 6	2 5	17 7	13 9	12	3	367	28	Shale
43	Slag	3 90	2 00	3 00	243	125	187	4 40	0 04	13 5	2 7	14 6	3 0	18 3	10 7	21	3	500 +	1	Slag
45	Slate	3 35	2 60	2 75	209	162	172	2 10	0 05	12 4	1 6	24 4	3 2	19 7	1 1	56	1	500 +	1	Slate
26	Syenite	3 05	2 15	2 70	190	134	168	4 21	0 08	14 4	1 7	23 5	2 8	19 2	17 3	34	8	375	16	Syenite

## ELEVATION OF PASSES.

(THIS TABLE IS COMPILED FROM THE BEST INFORMATION AT HAND  
AND IS BELIEVED TO BE CORRECT)

	Feet
Alpine Pass	
Alpine Tunnel	11,606
Argentine Pass	13,286
Boreas Pass	11,489
Breckenridge Pass	11,503
Berthoud Pass	11,306
Coechetopa Pass	10,032
East River Pass (Gunnison County)	11,163
Elwood Pass	11,678
Fremont Pass	11,320
Gove Pass	9,570
Hoosier Pass	10,313
Hayden Pass	10,780
Hilltop Junction	9,839
Independence Pass	12,095
La Veta Pass	9,378
Lake Creek Pass (Lake and Gunnison Counties)	12,226
Mosquito Pass	13,188
Mosca Pass (Huerfano and Saguache Counties)	9,713
Marshall Pass	10,950
Molas Lakes	10,488
Monarch Pass	11,650
Muddy Pass (Jackson and Grand Counties)	8,772
Ohio Pass	10,033
Poncha Pass	8,945
Pearl Pass (between Pitkin and Gunnison Counties)	12,715
Red Mountain	11,018
Rollins Pass	11,680
Sangre de Cristo Pass	9,454
Stony Pass	12,590
San Francisco Pass (Las Animas County)	8,560
Tennessee Pass	10,276
Tarryall (Park County)	12,466
Trout Creek (Park and Chaffee Counties)	9,346
Weminuche Pass	10,628
Weston Pass	12,109
Willow Creek Pass	9,683



NORWOOD HILL ROAD, SAN MIGUEL  
COUNTY—STATE PRIMARY ROAD NO.  
44.



SILVERTON-OURAY ROAD, OURAY COUNTY—STATE PRIMARY ROAD  
NO. 13.





	Feet
Yellow Jacket Pass (Rio Blanco County)	7,493
Georgia Pass.	
Webster Pass...	
Loveland Pass	
Jones Pass.	
Taylor Pass	
Cottonwood Pass	
Williams Pass	
Cumbres...	10,003
Lulu Pass.	
Buffalo Pass	10,650
Wolf Creek.	10,850

## CONTRACT WORK

COUNTY	State		GRADING AND		
	No.	Character of Work	Unit	Total Sum	Length, Miles
			Price Per Cu. Yd.		
Adams	2	Grading		\$ 565 00	2 <sup>1</sup> / <sub>2</sub>
		Graveling	\$1 62	3,456 00	2 <sup>1</sup> / <sub>2</sub>
		Force account at cost plus 10%			
Alamosa	16	Grading	0 09	1,347 40	6 63
Arapahoe	27	Graveling	1 00	400 00	1
	27	Graveling and grading (includes 40-ft. retaining wall, pipe culverts and rolling gravel)		2,804 33	1
Bent	6	Grading—Estimated haul, 1,800	0 25	3,090 85	6 1-8
		Surfacing (shale), borrow	0 10		
		Surfacing (shale), in place.....	0 80	420 00	
		(Shale and clay), 4,500' haul	0 40	440 00	
Boulder	2	Graveling, 16' wide, Boulder road	1 09	15,538 04	9
	2	Graveling, 16' wide—			
		North and South road—Miles 1 and 2	1 06 <sup>1</sup> / <sub>2</sub>	3,373 92	2
		Miles 3, 4 and 5	1 12 <sup>1</sup> / <sub>2</sub>	5,346 00	3
		Graveling, North and South road	1 12 <sup>1</sup> / <sub>2</sub>	4,455 00	2 <sup>1</sup> / <sub>2</sub>
Douglas	8	Grading, earth	0 20	471 48	1 <sup>1</sup> / <sub>4</sub>
		loose rock	0 40		
	8	Grading, earth	0 14	2,887 12	
		loose rock	0 35		
		solid rock	0 80		
	3	Grading, earth fill	0 18	189 72	1-8
	3	Grading, earth fill	0 16	4,052 66	1 <sup>1</sup> / <sub>2</sub>
	8	Grading (Superintendent, \$125 per mo.; man and team, 50c per hr.; man and two teams, 85c per hr., and all tools and equipment; man, 25c per hr.....		5,727 32	

## DURING 1913 AND 1914.

## SURFACING

Total Cu. Yds.	Cost Per Mile	Date	Contractor's Name	Remarks
2,500	\$ 226 00	7-20-14	H. L. Kuykendall, Denver, Colo.	Hard adobe, ditch and crown
About 2,200	1,425 60		H. L. Kuykendall	Pit gravel, crush and haul 3 miles
			H. L. Kuykendall	For extra work. All about 60' completed
.....	203 23	6-10-14	H. Albright, Atamosa, Colo.	Loam and sand; ditch and crown. Finished
About 400	400 00	2-00-14	Green & Olin, Denver	Pit gravel, not crushed or spread. Haul about 2½ miles. Finished
1,978 of gravel	2,804 33	7-3-14	City of Denver; city paid ½; county paid ½	Haul gravel, 2 miles. Finished
19,295	505 05	10-00-13	Beck & Wright, Las Animas	Also includes placing 18 culverts. Finished
525				
1,100				Finished
	1,726 56	5-8-13	E. J. Carver, Boulder	Crush, haul and spread; average haul, 2½ miles. Finished
42	1,782 00		O'Neil & Co., Boulder	Crush, haul and spread; average haul about 3 miles
3,960	1,782.00	4-10-14	H. L. Kuykendall, Denver	Crush, haul and spread; average haul about 2 miles. Finished
		6-30-13	P. D. Pugh and E. J. Andrews, Castle Rock, Colo.	Short piece of adobe and rock excavation, 3' cut, between Larkspur and Greenland. Finished
		7-7-13	Ed. O'Neil, Sedalia	Larkspur Hill
		1-13-14	Ed. O'Neil, Sedalia	Approach to bridge near Gann. Finished
		2-4-14	Ed. O'Neil, Sedalia	Approach to bridge near Wolhurst. Finished
		4-27-14	Ed. O'Neil, Sedalia	Between Larkspur and Castle Rock by day work for outfit. Finished

## CONTRACT WORK DURING

## GRADING AND

COUNTY	State	Road	No.	Character of Work	Unit	Price	Total	Length,
						Per Cu. Yd.	Sum	Miles
Dolores			3	Graveling		\$0 75	\$4,188 37	2
				Grading, earth		0 14		1
				Force account at cost, plus 10%				
			8	Grading, earth		0 155		
				borrow fill		0 155		
				overhaul		0 100		
			45	Grading, earth		0 30		243 ft.
				solid rock		0 75		100 ft.
				earth		0 30		
				solid rock		0 75		
Eagle				earth		0 30		400 ft.
				earth		0 35		500 ft.
				earth		0 45		700 ft.
			10	Grading (inc. 14 box culverts 2-16' span bridges)—				
				Sec. 1—earth			2,540 00	5,400 ft.
				rock				
				Sec. 2—earth			1,050 00	14,357 ft.
				rock				
			10	Grading, Sec. 1 (inc. 1 box culvert, 1'x1')			295 00	284 ft.
				Sec. 2 (inc. 1 box culvert, 2'x2' and 56 ft. guard rail)			295 00	1,357 ft.
Elwood Pass Road			15	Grading—	Per day			
				Men, rock work	\$3 00	Day labor force		5 <sup>3</sup> / <sub>4</sub>
				Men, laborer	2 50			
				Foreman	3 75			
				Team	3 00			
				Blacksmith	3 75			
				General foreman	4 75			
				4-horse team and driver	7 50			
				2-horse team and driver	5 00			
				And 5% for outfit and superintendent				
			15	Grading—				
				2-horse team and driver	5 00		3,652 48	14,178.80 ft
				Foreman	5 50			
				Labor, per hour	25			

## 1913 AND 1914 Continued.

## SURFACING Continued

Total Cu. Yds.	Cost Per Mile	Date	Contractor's Name	Remarks
	\$2,091 18	2-9-14	Louis F. Bertolett, Littleton, Colo.	South of Acequia, and to place all culverts by force account
29,950	}	7-15-13	H. E. Owen, Denver	Greenland to Palmer Lake. Road- way 28' between ditch. Finished
4,505				
900				
		1913	Geo. Branston, Rico	Near Rico, Colo.
		1913	Andy and J. Davidson, Rico, Colo.	Near Rico, Colo. Finished
		1914	J. H. Cothran and A. D. David- son, Rico	Near Rico, Colo. Finished
		1914	Rohde & Pantelone, Rico, Colo.	Near Rico, Colo. Finished
		1914	C. W. Pinkerton, Rico	Near Rico, Colo. Finished
6,096		7-28-13	Frank Smith, Redeliff, Colo.	Tennessee Pass to Pando. Sec. 2 was regrading old grade of D. & R. G. R. R. Finished
1,617				
7,646				
235		11-11-13	Joe Johnson, Redeliff, Colo.	Near Minturn, Colo. Finished
		8-00-13	L. J. Chapinan, Monte Vista, Colo. and W. C. Christensen, Monte Vista, Colo.	Between Jasper and Pass-me-by- Mine. Finished On east side, up Alamosa River
		9-00-13	Pagosa Lumber Co., Pagosa Springs	West Fork bridge up West Fork for 3 miles. Finished

## CONTRACT WORK DURING

## GRADING AND

COUNTY	State Road No.	Character of Work	Unit Price Per Cu. Yd.	Total Sum	Length, Miles
	15	Grading—			
		Sec. 1	\$	645 00	5,000 ft.
		2		515 00	3,800 ft.
		4		1,590 00	5,400 ft.
		5		1,045 00	3,000 ft.
		6		800 00	975 ft.
		Culverts by force account, plus 10%.			
	15	Grading—			
		Sec. 1		3,040 00	2,975 ft.
		2		3,082 00	5,000 ft.
		3		2,587 00	5,000 ft.
		4		1,805 00	5,000 ft.
		5		3,130 00	7,000 ft.
		6		3,052 00	9,000 ft.
		7		2,995 00	10,317 ft.
		Culverts by force account plus 10%.			
Garfield	42	Grading—			
		Clearing and grubbing, per acre	\$20.00		
		Earth and borrow	0 23		
		Rock	1 00		
		Concrete	12.50		
		Dry wall	0 85		
		Overhaul, per 100 ft.	0 05		
Grand	39	Grading—10 ft. road, solid		1,850.00	11,400 ft.
		14 ft. road		1,500 00	4,500 ft.
Huerfano	16	Right of way from the D. & R. G. Railroad Co.			5 $\frac{3}{4}$ mi.
Jackson	40	Grading, earth	0 0975		
		earth fill	} 0 24		
		wagon haul			
Jefferson	27	Graveling, crushing and spreading	1 125		8 $\frac{1}{2}$ mi.
	27	Concrete, 18' wide, 7" thick		7,500 00	1 mi.
		Not including grading, bridges or culverts. Work done for Mountain Park Cam. of			

## 1913 AND 1914 - Continued.

## SURFACING - Continued

Total Cu. Yds.	Cost Per Mile	Date	Contractor's Name	Remarks
	\$	9-14-14	Logan & Lowell, Durango, Colo.	End of present road on West Fork to the Cliffs, Sta. 0+25.14 ft. road in flat, 8 and 10 ft. on side hill. Nearly finished
		10-29-14	Logan & Lowell, Durango, Colo.	"Cliffs" to top of Wolf Cr. Divide (except bridges), Road 8' and 10', with 1' ditch, in solid clearing 40 ft. wide. In progress
35 acres 24,473 cu. yds. 6,800 cu. yds.		7-7-13	C. W. Fravert, Rifle, Colo.	Rifle towards Meeker. Finished
		6-3-13	Bernard Kihner	Trough road, Sta. 45 to 160
		3-00-14	Sam'l Mounier, Kremmling	Trough road, Sta. 390 to 435
			Huerfano County and D. & R. G. R. R. Co.	Use of old narrow gauge grade for wagon road
		6-31-13	J. R. Clyde, L. and S. R. Hockley, Walden, Colo.	Finished
1,300 to 1,500 c. y. per mile	From \$1,462 50 to \$1,687 50	7-21-14	H. L. Kaykendall, Platteville	Morrison road, by Mountain Park Com., County and State; average haul, 2 miles. Finished

1914

Denver



## CONTRACT WORK DURING

## GRADING AND

COUNTY	State Road	Character of Work	Unit		Length, Miles
			Price	Total Sum	
Lake	17	Grading, earth and loose rock	\$0 50	}	200 ft.
		dry wall	0 50		
	17	Grading, earth and loose rock	0 50	}	375 ft.
		dry wall	0 50		
	17	Grading, earth and loose rock	0 50	}	800 ft.
		dry wall	0 45		
La Plata	15	Grading, 16' roadway, and hauling and placing culverts		6,350 00	2 1-5 mi.
Larimer	50	Grading, earth	0 245	}	3 Mi.
		solid rock	0 73		
		borrow fill	0 18		
		overhaul for 100'	0 02		
	2	16' roadway, ditches 2' wide and 1 ft. deep		}	6 mi.
		Grading, earth	0 1475		
		solid rock	0 85		
		borrow	0 1225		
		overhaul per 100'	0 02	}	
		24' between ditches, grading per 100', \$4.90			
Las Animas	26	Grading, except rock, or filling in arroyos (24' between ditches)			7 mi.
	29	Grading (approaches to bridge)	0 15		1 1/4 mi.
Mesa	11	Grading (culverts furnished by county)		6,000 00	3,400 ft.
Pitkin	25	Grading, earth	0 34	}	17 mi.
		loose rock	0 74		
		solid rock	0 99		
		overhaul per 100 ft.	0 25		
Prowers	6	Grading and Surfacing—		}	17,800 ft.
		Earth fill	0 11		
		Fill 16'	0 12		
			0 13		
		Overhaul per 100'....	0 05		
		(Exc. between ditches, 27')			

## 1913 AND 1914—Continued.

## SURFACING—Continued

Total Cu. Yds.	Cost Per Mile \$ . . .	Date	Contractor's Name	Remarks
		9-25-13	J. R. Bond, Leadville	Leadville, south. Finished
		1-15-14	J. R. Bond, Leadville	Leadville, south. Finished
		1-2-14	Joseph Stalk	Leadville, south. Finished
	\$2,886.40	11-15-13	A. R. Skidmore, Durango, Colo.	Durango to Carbon Jet. Material, earth and rock. Finished
	14,270 11	5-16-14	The Engineers' Const. Co., Gree- ley, Colo.	Upper Dixon Canon to Hewlett's Gulch. (For culverts, see table of bridge contracts.) Finished
12,200 Ex. 4,700 borrow		8-4-14	Odeil Bros., Fort Collins, Colo.	From 9 miles northeast of Wellin- ton, extending northward. Fin- ished
	60 00	6-3-13	E. C. Hopkins, Trinidad, Colo.	Aguilar to N. county line. County to furnish grader. Finished
		8-2-13	Juan B. Vigil, Trinidad, Colo.	1/2 mile. Finished
		3-19-13	Marshall B. Chapman, De Beque, Colo.	Finished
20,000 15,000 5,570		8-14-13	McIluff & McKillip, Denver, Colo.	From near Aspen to top of Inde- pendence Pass, quantities given are approximate. In progress
1,300 8,136 900		8-14-13	W. G. Allison, Lamar, Colo.	Granada bridge to Sta. 220. Fin- ished

## CONTRACT WORK DURING

## GRADING AND

COUNTY	State Road No.	Character of Work	Unit Price Per Cu. Yd.	Total Sum	Length, Miles
	28	Grading and Surfacing—			
Prowers		Sec. 1, earth	\$0 14		6,100 ft.
		2	0 14		9,900 ft.
		3	0 14		7,400 ft.
		4	0 14		9,300 ft.
		Hauled in Material—			
		Sec. 1	0 50		
		2	0 84		
		3	0 65		
		4	0 80		
	6	Grading—Sec. 1, earth ex.	0 1125		7,725 ft. 5,632 ft.
		Sec. 1, surfacing	0 38		9,707 ft.
		Sec. 2, earth ex.	0 095		13,500 ft.
		Surfacing 0 to 135	0 45		13,500 ft.
Rio Blanco.	12	Grading—Sec. 1, earth	0 24		20,000 ft.
		Overhaul, over 100'	0 025		
		Sec. 2, earth	0 24		30,000 ft.
		Overhaul, per 100'	0 025		
		Sec. 3, earth	0 24		25,000 ft.
		Overhaul, per 100'	0 025		
		Sec. 4, earth	0 30		32,300 ft.
		Overhaul, per 100'	0 025		
San Juan.	13	Grading, earth	0 25		1½ mi.
		loose rock	0 40		
		solid rock	1 40		
		dry wall	1 00		
		cribbing, \$0.09 ft.			
		overhaul, per 100'	0 05		
		lumber in place, \$40.00 per M.			
	13	Grading, earth	0 28		2½ mi.
		loose rock	0 45		
		solid rock	1 40		
		dry wall	1 00		
		cribbing, \$0 09 per ft.			
		overhaul, per 100'	0 05		
		lumber in place, \$42.00 per M			

## 1913 AND 1914—Continued.

## SURFACING—Continued

Total Cu. Yds.	Cost Per Mile	Date	Contractor's Name	Remarks
700	\$	7-28-13	L. McDowell Const. Co., Lamar, Colo.	Holly, south to county line. Fin- ished
528				
1,865				
762				
702				
933				
873				
		2-3-14	Wilcox & Stephenson, Lamar, Colo.	Lamar to Granada. Finished
6,846.8			Filoon & Ford, Lamar	
7,939.6			Wilcox & Stephenson, Lamar, Colo.	Lamar to Granada. Finished
23,300		3-10-14	C. W. Fravert, Rifle	Rifle and Meeker. Finished
25,300				All culverts furnished by county on ground. For culverts and
29,300				bridges, see Bridge Sheet. Fin- ished
29,700				
		7-18-13	Loftus, Skidmore & Hall, Durango, Colo.	Silverton, towards Red Mountain. Finished
		7-19-13	Loftus, Skidmore & Hall, Durango	Silverton, toward Durango. Fin- ished

## CONTRACT WORK DURING

COUNTY	State		GRADING AND		
	Road		Unit	Total	Length,
	No.	Character of Work	Price Per Cu. Yd.	Sum	Miles
San Miguel...	44	Grading and culverts	\$ . .	\$8,979 00	9,900 ft.
	44	Grading and culverts		5,890 00	68,559 ft.
					(See note)
	44	Grading and culverts...		7,250 00	15,030 ft.

COUNTY	State		BRIDGES AND		
	Road		Concrete,	Piling,	Length
	No.	Character of Work	Cu. Yd.	Per Ft.	
Adams, . . . . .	7	Concrete girder, reinforced			200 ft.
		Piers, abutments and wings.	\$ 7.90		4-50' spans
		Girders and floors. . . . .	9.85		
		Piling, 15 ft. . . . .		\$0 35	
		Piling, 30 ft. . . . .		0 75	
		2" railing, complete, per ft. in place	0 95		
		2" Oregon lumber—\$25.00 per M			
		Grading approaches . . . .	0.18		
	7	Piled wings to flush bridge . . . .			
Archuleta	15	Steel truss bridge, 14' roadway.			100 ft.
Arapahoe	31	Flush bridge, 16' roadway . . . .			288 ft.
		Bridge, extra length, \$9 50 per ft. of bridge			
		Extra piling, \$0.50 per ft. of pile			480 ft.
	3	Eye beam, concrete 20' roadway . .			
Crowley . . . . .	33	Eye beam, concrete bridge, 20' roadway			26' span
Douglas . . . . .	3	Eye beam, concrete in abutments . . . . .	\$ 6 00	}	26' span
		Including reinforcing in floor . . . . .	28 40		
		Extra concrete . . . . .	8 00		
		2½" Railing, complete in place, per lineal ft.	1 35		
		Spruce piling . . . . .	0 30		
		Extra work, cost plus 10% of 20' roadway			

## 1913 AND 1914—Continued.

## SURFACING—Concluded

Total Cu. Yds.	Cost Per Mile \$	Date	Contractor's Name	Remarks
		7-8-13	S. J. Adams, Placerville	Norwood Hill. Culverts included. Finished
		7-10-13	W. H. Nelson, Norwood, Colo.	Placerville-Dalias road. Note-- Widening at various points along line. Finished
		3-9-14	W. H. Doyle, Telluride, Colo.	Keystone Hill. Finished

## CULVERTS

Total Cost	Date	Contractor's Name	Remarks
	6-11-13	Colo. Bridge & Const. Co., Denver, Colo.	Sand Creek; also for Arapahoe County. Finished. \$1,400 extra work on force account at cost plus 10%. Bridge de- stroyed by flood, August, 1913, when almost completed and before forms were taken out. Rebuilt by contractor.
\$ 830 00	3-11-13	Colo. Bridge & Const. Co.	Box Elder Creek. 20' piles, 2" Oregon planks. Finished
3,395 00	9-14-13	Missouri Valley B. Co., Denver, Colo.	Through truss and one tubular pier. Fin- ished. (Plans filed after bridge and abutment was constructed)
2,500 00	11-14-12	Levy Const. Co., Denver, Colo.	Middle Bijou Cr. Finished
4,250 00	1-2-13		Concrete slab, reinforce, 12' bents, piled foundation
1,964 50	1-9-13	Frank Ford, Littleton, Colo.	Little Dry Creek, near Petersburg. Piled foundation. Finished
1,693 20	4-00-14	J. H. Peck	Bob Creek. Finished
3,774 25	9-22-13	F. C. Brown, Denver, Colo	Sand Creek, near Wolhurst. Finished

## CONTRACT WORK DURING

## BRIDGES AND

COUNTY	State		Concrete,		Length
	Road	Character of Work	Cu. Yd.	Piling, Per Ft.	
	8	Reinforced concrete cattle run	\$9 00	..	7' span
		Extra work at cost plus 10% , 20' roadway			
	8	Reinforced concrete cattle runs and culverts	9 00		
		2" Railing pipe, 18c per lineal ft. of pipe			
		Barbed wire fence, 4 wires, 7' posts, 16' apart, at \$140.00 per mile			
		Extra work at cost plus 10% , 20' roadway			
	5	Piled bridge, complete			200 ft.
		20 ft. roadway—3" Native floor—concrete abutments on piers—16ft. bents.			
	8	Reinforced concrete cattle run and culverts,			
		20 ft. roadway	9.00	....	.....
Eagle	10	Reinforced concrete arch, 20' roadway			100 ft.
					2-50' spans
Elwood Pass Road	15	Red spruce log stringers and floor, 16' roadway—			
		4 bridges, 18' wide			30' spans
		2 bridges, 18' wide			40' spans
		1 bridge, 18' wide			50' span
	15	A-frame, 2 spans of 45' each, red spruce stringers, 3" native floor, 16' roadway			90'
El Paso	18	Reinforced concrete arch, 20' roadway, piled foundation			155 ft.
					2-75' spans
	4	Reinforced concrete arch, 20' roadway			200 ft.
					2-60' spans
					1-70' span
	50	Reinforced concrete girder, 20' roadway			100 ft.
					2-50' spans
	3	Reinforced concrete girder, 20' roadway.			104 ft.
					2-50' spans
	18	Reinforced concrete arch, 20' roadway			40 ft., 1 span
Fremont	3	Reinforced concrete girder, extension of old bridge, 16' roadway			42' span
	30	Reinforced concrete arch, 20' roadway			25' span
	22	Reinforced concrete arch			135 ft.
		Piling extra, but not to exceed \$500.00			



## 1913 AND 1914—Continued.

## CULVERTS—Continued

Total Cost	Date	Contractor's Name	Remarks
	8-22-13	Farrell & Ellis, Castle Rock, Colo.	Between Larkspur and Greenland. Finished
	7-15-13	Chas. H. Allis, Greenland, Colo.	Between Greenland and Palmer Lake. Finished
\$1,950 00	11- 5-13	Colo. Bridge & Const. Co., Denver, Colo.	Between Acequia and Sedalia, over Sand Wash. Finished
		Manhart & Lowell, Castle Rock, Colo.	Between Castle Rock and Larkspur. Finished
6,982 00	9-28-14	Pueblo Bridge Co., Pueblo, Colo.	At Gypsum, Colo. Finished
500 00	9-19-14	Oscar McCoy, Pagosa Springs	Up Wolf Creek. In progress, 2 bridges.
330 00			Finished
200 00			
444 00	9-14-14	Grant Shields, Pagosa Springs	Over Wolf Creek, at mouth. Finished
16,200 00	9-19-14	Pueblo Bridge Co., Pueblo, Colo.	Fountain Creek; Nevada St., Colorado Springs. In progress, foundations finished
13,200 00	1914	Pueblo Bridge Co., Pueblo, Colo.	Fountain Creek, at Buttes. Finished
4,586 00	6-00-13	Pueblo Bridge Co., Pueblo, Colo.	Squirrel Creek Bridge, near Peyton, Colo. Finished
6,700 00	10-00-12	Central Con. Co., Colorado Springs, Colo.	Monument Creek, near Pikeview. Finished
1,975 00	1-00-14	Pueblo Bridge Co.	Fountain Creek, near Green Mountain Falls. Finished
\$5,200 00	1914	Midland Bridge Co., Denver, Colo.	Cattle Creek, in progress. Foundations finished
920 00	7 00-13	Pueblo Bridge Co., Pueblo, Colo.	Sand Creek. Finished
8,980 00	3-10-13	Pueblo Bridge Co., Pueblo, Colo.	Over Arkansas, near Florence. Finished (Plans filed after bridge was built)

## CONTRACT WORK DURING

## BRIDGES AND

COUNTY	State Road No	Character of Work	Concrete, Cu. Yd.	Piling, Per Ft.	Length
Grand	47	Low steel truss, on tubular piers, 16' roadway			220 ft. 2 90' spans 2-piled app'ches
Gunnison	20	Low steel truss, 16' roadway			60' span
Jackson	50	Low steel truss, 16' roadway			70' span
Larimer	51	Steel truss, 12' roadway			50' 5" span 61' 3" span
		Extra concrete in old abutment, \$25.00 per cu. yd.			
	24	Reinforced Concrete—			
		Class B-Concrete of 1-2-4 Mixture . . . . .	\$9 00		14' span
		Class C-Concrete of 1-3-6 Mixture . . . . .	8 40		24' span
		Price per lb. for steel in place, \$0.03; per foot for 2" pipe railing in place, \$0.75; 16'			
Las Animas	26	Reinforced box cuvert, 1-2-4; 1-2½-5; 1-3-6 mixture . . . . .	\$9.55		8 0'
	26	Reinforced concrete bridges, 4 bridges . . . . .	7 50		
	29	Reinforced concrete bridges and culverts, 1-2½-5 mixture . . . . .	8 75		
	26	Reinforced concrete culverts, 2 of them 1-3-5 mixture . . . . .	8 50		
Lincoln	32	Piled timber bridges, 16' roadway, 2 of them . . . . .			36' 12' bents 64' 16' bents
Logan	9	Eye beam concrete bridges, 5 of them (angle iron railing) . . . . .			2-14' spans 1-18' span 1-34' span 1-40' span
Mesa	11	Through steel truss . . . . .			
Moffat	41	King & Queen truss, timber bridges			6-32' spans 6-16' spans 6-24' spans 4-12' spans

## 1913 AND 1914—Continued.

## CULVERTS—Continued

Total Cost	Date	Contractor's Name	Remarks
\$5,493 00		Levy Const. Co., Denver, Colo.	Over Blue River. Finished. (Plans approved and returned to County Surveyor)
	1913	Pueblo Bridge Co., Pueblo, Colo.	Over Lake Fork of Gunnison to Sapinero. Finished
1,985 00	2-1-13	Midland Bridge Co., Kansas City, Mo.	Michigan Creek, north of Walden. Fin- ished
1,405 80	12-00-13		Big Thompson Creek, west of Loveland. Finished. Plans filed after bridge was built
	1913		Farmers' ditch. Finished English ditch. Finished
roadway			
	7-26-13	Gaudio Bulgaroni, Trinidad, Colo.	Between Bowen and Suffield. Finished
	7-14-13	Antonio Lopresto, Aguilar, Colo.	Aguilar to North county line. Not to ex- ceed \$2,000. Finished
	6-2-13	Battista Enrietti	Finished
	8-15-14	Chas. Emerick, Trinidad, Colo.	Near Chicosa Arroya. Finished
\$1,275 00	10-15-13	W. A. Phipps, Flagler, Colo.	Seven Mile Creek and Barrow Gulch. Fin- ished
4,221 80	1913	Robert Drake, Omaha, Neb.	Over Midland Ditch and Powell-Sterling No. 1 Ditch, Harmony No. 1 Ditch, Paw- nee Creek. All finished
2,497 00 } 9,998 00 }	2-5-13	J. J. Lumsden, Grand Jet., Colo.	Mouth Plateau Creek and over Plateau Creek, near Atwells. Finished
5,000 00	1-7-14	Levy Const. Co., Denver, Colo.	From Craig to west line of State. Finished

CONTRACT WORK DURING

BRIDGES AND

COUNTY	State Road No.	Character of Work	Concrete, Cu. Yd.	Piling, Per Ft.	Length
Morgan...	24	Eye beam concrete..... (County supplied all material f. o. b. cars; 451 cu. yds. concrete; 136 piles; 49-18 eye beams; 420 ft. railing)	.....	.....	210 ft. } 7-30' spans }
Park.....	35	Eye beam concrete, 2 bridges, 16' roadway.	.....	.....	1-18' span } 1-30' span }
Pueblo....	5	Reinforced concrete arch, 16' roadway..	.....	.....	1-19' 4" span
	26	Eye beam concrete, 16' roadway.....	.....	.....	1-18' span
	26	Reinforced concrete arch, 16' roadway ..	.....	.....	1-20' span
	26	Steel girder, 16' roadway.....	.....	.....	1-40' span
Prowers...	6	Steel span, 16' roadway.....	.....	.....	1-55' span
Rio Blanco.....	42	Steel low truss, 16' roadway .....	.....	.....	1-100' span
Sedgwick..	9	Eye beam concrete, 16' roadway (2 bridges).	.....	.....	1-21' span } 1-15' span }
		(Extra concrete, \$8.00 per cu. yd.)			

## 1913 AND 1914—Concluded.

## CULVERTS - Concluded

Total Cost	Date	Contractor's Name	Remarks
\$2,409.00 for labor	4-8-14	F. H. Cowell, Denver, Colo.	At mouth of Bijou Creek. Finished
2,300 00	10-11-13	Levy Const. Co., Denver, Colo.	Over north fork of South Platte River, at Webster and Grant, Colo. Finished
2,456 00	5-5-13	Pueblo Bridge Co., Pueblo, Colo.	Dry Creek, Canon City road. Finished
1,880 00	7-7-13	Pueblo Bridge Co., Pueblo, Colo.	Walsenburg road. Finished
1,850.00	10-6-13	Pueblo Bridge Co., Pueblo, Colo.	Little Granero. Finished
1,900 00	10-6-13	Pueblo Bridge Co., Pueblo, Colo.	Greenhorn Creek. Finished
1,440.00	8-8-13	Lon Filoon, Lamar, Colo.	Buffalo Creek. Finished
4,600 00	1913	Patterson-Burghart Co., Denver, Colo.	White River. Finished
521 00	7-8-13	Standard Bridge Co., Omaha, Neb.	Finished
475 00			

## REPORT OF STATE ROAD SUPERVISORS FOR BIENNIAL PERIOD 1913 AND 1914.

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Silverton, Colo., Jan. 8, 1915.

Hon. T. J. Ehrhart,  
State Highway Commissioner,  
Denver, Colorado.

Dear Sir: I hereby submit my report for the years 1913 and 1914. The road building in general for 1914 has not been as rushing nor active as it was in 1913, and the main reason is that the state had not the money on hand to apportion out to each county.

In Ouray County transferring part of the money for the Red Mountain road to the Dallas Divide road, they have built the two miles of the badly broken link between Ouray County and San Miguel County line; this completes the road between Ridgway and Telluride, a distance of 45 miles, while the new grade that has been started on Keystone Hill, six miles below Telluride, has been almost completed. This will reduce the grade from 10 to 12 per cent to 4 and 6 per cent. The entire 45 miles is in excellent condition.

When leaving Sawpit last Summer, and going to Norwood, down the San Miguel River, quite a large road camp was located. They were at work cutting off some very steep grades, and when this is done, San Miguel County will have a well built system of roads, that will reach as far as the county line towards Paradox Valley. The bridge work in this county, in particular the large ones, crossing the San Miguel River, and also the Dallas Divide river, are built out of No. 1 logs (yellow pine), the abutments are well protected from highwater, and the drainage in general has been well taken care of. Also the road from Vance Junction to the top of the divide at Lizzard Head was put in good travelable condition last year.

In Ouray County from the San Juan County line to Ouray, some very bad places have been rebuilt, and some very steep grades with heavy rock work must still be taken off. This will be very expensive on account of the quartzite formation, and by all means, nothing but machines should do this work, because there are several miles to be built.

From Ouray down to Montrose county line the road is in excellent condition, and a great deal of improvements have been made this year; roads have been widened and culverts put in wherever necessary. In Montrose county from the Ouray county line to Montrose, the road is in excellent condition. The Commissioners have taken great interest in keeping all the main lines up and well dragged after each hard rain; some heavy steel bridges have been put in across the large canals.



DELTA-HOTCHKISS ROAD, DELTA COUNTY—STATE PRIMARY ROAD NO. 46.





The road from Montrose over the Blue Mesa is in fine shape for a new roadbed. While in 1913 this road was constructed, the drainage had not been taken care of, but in 1914 this was attended to.

From Montrose to Delta, a distance of 22 miles, is in No. 1 condition, and I am pleased to state that all of the counties on the Western Slope have shown the greatest interest, not only in the building of roads, but also in the maintenance of the roads. The culvert and the bridge work in all of these counties has been carefully done, so the water is well taken care of, and from Delta to Hotchkiss, and from Hotchkiss to Fort Crawford, a distance of 70 miles, the road is in first-class condition, with many miles of new road built on this line.

From Fort Crawford over the Black Mesa to Sapinero, Gunnison county, great improvements were made. The snow conditions on the Black Mesa, and also on the Blue Mesa are not troublesome, and can be very easily taken care of, so these will be early and late routes.

From the Delta county line into Sapinero (in Gunnison county) some very good road building was done, and I believe some changes should be made for the betterment of the road, beside cutting off unnecessary road building. The road between Sapinero and Gunnison has been greatly improved by cutting off some very steep grades; also grading up the roads in the bottoms, from Gunnison to Monarch Pass. The entire distance has been overhauled and the entire road put in first-class condition; the grade going to the top of the pass has not been changed, but still has a grade of 10 per cent, for five miles straight, but this will be cut down to 4 and 5 per cent as soon as possible. The road to Pitkin has almost been entirely rebuilt, and heavy road work has been going on during this year to the Sagnache county line, and is almost completed at this time.

Hinsdale county has the most willing people to build and construct roads if they only had the money. With what little money they had of their own, and the money received from the State, they had value received for every dollar they spent, and completed the through line from Sapinero to Lake City, and from Lake City up Shingillon over Twin Pass to the Mineral county line. They are in need of help from the State, and I wish to recommend that all aid be given them that is possible. This will mend another link in the broken chain of roads.

In going from Delta to Grand Junction, a distance of fifty miles, great improvements have been made by Delta county as well as Mesa county. A splendid piece of road was built by Delta county volunteer labor, and a very bad deep gulch was cut off, and a four per cent grade put in place.

They have also surveyed the entire road to Mesa county, and the worst places on this line have been rebuilt. Mesa county has practically done the same in Mesa county from Grand Junction to the Utah line, a distance of 40 miles, and great road improve-

ments have been made in this entire distance. While the flood water in the low lands has given them a great deal of trouble, to a great extent they have overcome these difficulties by raising the roadbeds, and by leaving plenty of room for water where bridges and culverts had to be put in, have overcome this difficulty.

In leaving Grand Junction, going up the Grand River above Palisade, a grand piece of road can be seen here; the pride of Mesa county.

Leaving Grand River and going up Plateau Creek, a distance of 10 miles, a fine piece of road was constructed by convict labor, and going from here over the Mesa to Debeque. I found two large road camps at work, building entirely new roads, and cutting off a number of bridges, and selecting a far better location for the road. This will connect Grand Junction and Debeque, and Garfield county with a first-class road.

In leaving Debeque, going over Nigger Hill, from Nigger Hill through Grand Valley to Rifle, great improvements have been made. The road has been straightened out, and the old road bed in many places has been widened, and put in first-class condition. Drainage has been taken care of, and where light bridges were needed they were put in. From Rifle toward Meeker in Rio Blanco county, a 10 mile piece of new road was built, and is a credit to any county. Five miles below Rifle a very bad hill was cut off, and the grade reduced from 10 to 5 per cent. East of Rifle toward New Castle a number of very bad hills are cut off; this has been expensive work, and now that it is almost completed has made a most remarkable improvement over the old road. Some very bad places were cut off between New Castle and Glenwood Springs; the entire distance being rebuilt. This stretch of road contains some very heavy rock work. Part of this work was done by convict labor, and part by contract.

In leaving Glenwood Springs for Carbondale the road is in fine condition. From Carbondale to Aspen (Pitkin county) the road is in very good condition, being mostly in the valley, and easily taken care of. From Aspen to Independence Pass a contract was let in 1913, and the work carried on during the year 1914. The entire distance is 29 miles from Aspen to the Pass, and an entirely new road is being built. The work was carried on very satisfactorily during 1914, and at this time is nearing completion.

From Glenwood Springs, going up the canon to Shoshone, and from here to Dotsero, the road is in fair condition, but no new road was built in 1914. In places the grade has been raised so that there will be no more trouble with high water. Garfield county is not afraid to spend money for road building as long as they get value received.

From Dotsero to Eagle, and from Eagle to Wolcott, fine improvements have been made on this road, with a fine cement bridge put across the Eagle River, and another being built below

Wolcott. From Wolcott to Red Cliff the entire road has been put in excellent condition, and some heavy cliffs were taken down. From Red Cliff to the Tennessee Pass a splendid piece of road was built; part of the Denver & Rio Grande narrow gauge 4 per cent roadbed was widened out, and generally fixed up, and by doing this it has cut out the 12 to 15 per cent grades.

In Lake county from Tennessee Pass to Leadville almost the entire distance has been built; from Leadville to Twin Lakes an entire new road has been built. Eight miles below Leadville toward Twin Lakes the road had to be built across a very bad swamp. Good gravel beds were close at hand, and a grade put across four feet high and 16 feet wide; this naturally left the road high and dry. From this point to Twin Lakes, the road is A-No. 1, and very easy to maintain; the material being mostly sand and gravel; the entire distance from Tennessee Pass to Twin Lakes is well drained.

From Twin Lakes to Granite the road is surveyed and work has been started.

The road is good between Granite and Buena Vista, and from there to Salida. If this distance were completed, we would have a boulevard from Denver, Colorado Springs and Pueblo up the Arkansas River to Canon City, to Salida, Leadville and Glenwood Springs to Grand Junction.

In leaving Salida, going to Poncha Pass, the road is in a splendid condition; the road material on this line is the finest kind of gravel, and has the tendency to pack and leaves a very hard surface. From Poncha Pass to Saguache, a distance of from 35 to 40 miles, has been entirely rebuilt; also the road from Saguache over Cochetopa Pass to the Gunnison County line, is almost completed.

A contract for nine miles of road was let last spring by the Forestry Department over Cochetopa Pass, this being the last piece of road to be built across the reserve. From the reserve line to the Gunnison county line the road building is very light, and the road has been built most of the distance; this completes another line from Salida over Poncha Pass to Saguache, and over Cochetopa Pass to Gunnison, at the junction of Sapinero, and over the Blue Mesa to Montrose and Delta, or by way of the Black Mesa to Ft. Crawford and Hotchkiss to Delta, and from there to Grand Junction.

From Saguache to Monte Vista, or by way of Hooper to Alamosa, good substantial road work has been done for this entire distance of 40 miles. A large ditching machine has been used most of the way, with very good results. Also, another line has been built from Saguache to Del Norte, known as the "foot-hill" route. All these roads have been put in good condition.

Coming across the valley from La Veta Pass to Fort Garland, the road is the old narrow gauge roadbed, a 4 per cent grade. This has been repaired by the counties. From Fort Garland to Alamosa has been surveyed, and contract let for the worst places,

particularly where the deep sand and alkali bottoms are. From Alamosa to Conejos, a distance of 30 miles, has been graded up and ditched on both sides of the road; also from Alamosa to the Rio Grande county line, the road has been well graded during this year. From Alamosa county line to Monte Vista, a distance of 10 miles, from Monte Vista down the Gun Barrel route, some very boggy ground has been remlilt, and put in good condition. From the Gun Barrel route up Alamosa Creek to the Pass-Me-By mine very little work was done this year, but from Monte Vista to Del Norte a good deal of grade work has been done, and some very heavy grade work was done between Del Norte and South Fork; also from South Fork to Mineral county line, and from there to Creede, a distance of 25 miles; also two steel bridges have been put in by Rio Grande county, one over South Fork, and the other across the Rio Grande River.

From Rio Grande county line to Creede, a distance of 20 miles, they have had a large road gang on during last year, and the road has been changed from the shady side of the gulch to the sunny side, and they are now contemplating putting in a heavy steel bridge across the Rio Grande River, 12 miles below Creede.

From Creede to the head of Antelope Park, a distance of 15 miles, has been almost entirely rebuilt, with the drainage well taken care of. From this point the road leads off to Lake City, but was not built on account of Hinsdale county not having money enough to rebuild this broken link of five miles.

Going back to South Fork, a new line has been located over Middle Fork to the head of Wolf Creek, and down Wolf Creek to the west fork of the San Juan River. A contract was let of three and one-half, and another of eight and a half miles to the same contractors, Logan and Lowell. Good, fast work has been experienced, and when these contracts are done, the road will be completed to the top of the range at Wolf Creek; and this will leave a broken link of 18 miles from the top of Wolf Creek to South Fork Station on the Rio Grande River. Whatever road building is done in the State, this is one of the most important pieces of road.

Six counties have been entirely cut off from all parts of the State. This means the entire southwest of Colorado, and the only connections that this section of the State has is a narrow gauge branch of the Denver & Rio Grande Railroad. While all the State roads in the six counties, from the West Fork of the San Juan river to Pagosa Springs, a distance of sixteen miles, and from Pagosa Springs to Durango, a distance of 63 miles; from Durango to Farmington, N. M., and Shiprock, a distance of eighty-five miles; from Durango to Mancos, and Mesa Verde Park, 30 miles; from Durango to San Juan county line, 15 miles; and from Mancos to Cortez up the Dolores River, a distance of 45 miles; also from Cortez to Shiprock, a distance of 50 miles, and from Cortez through McElmo Canon to the Utah county line, a





TENNESSEE PASS ROAD, NEAR BUENA VISTA, CHAFFEE COUNTY—STATE PRIMARY ROAD NO. 17.





distance of 40 miles; from Cortez to Monticello, a distance of 30 miles, a total mileage of 374 miles of first-class roads, besides from the mouth of McElmo Canon, Utah line, to Bluff City, Utah, a distance of 95 miles, the roads are in good travelable condition.

I have inspected every mile of these roads that I have mentioned, and when we look at the mileage of first-class State roads, the money that has been expended by all these counties, and the State, and then think that this mileage of first-class roads is still cut off from the entire State by one small broken link of 25 miles over a low pass.

The road between Durango (La Plata county) and San Juan county has also a broken link of 17 miles in San Juan county. Part of this ground is not very expensive road building, but part is very heavy rock work; also the road between Silverton and Red Mountain, Ouray county, has still a few miles of heavy grades of 15 to 20 per cent. If these were cut off the road between Silverton and Ouray, a distance of 25 miles, would be in fair travelable condition.

There is some very heavy rock work that will have to be done coming out of Ouray toward Silverton; also a half mile of rock work at Bear Creek Falls; another place that is known as "Mother Mine" slide, has some very steep grades, 15 and 18 per cent. These places will have to be cut out of solid rock and may prove quite expensive. If these places were put in this coming year, it would give the San Juan Basin another outlet, and connect up with the Western Slope.

Another broken link is at Rico, Dolores county. This will not be very expensive to build; the rock work would be in soft red sandstone, and from Rico to Lizard Head (top of range) will be all plow and scraper work. This will connect Rico, Telluride and Ridgway. All of my inspection work stopped the last of August, when I took charge of the construction on the Wolf Creek route.

In the year I visited 24 counties, some of them two and three times. I have not made less than 1,500 miles per month in automobile, and on horseback. I have found during my inspections that most of the counties through the mountains, put too many sharp curves; in building the new roads more cuts and fills should be made by all means.

I wish to thank all the County Commissioners in all of the counties I have visited for the kind and courteous treatment they have shown to me during the past two years.

Very truly yours,

LOUIS WYMAN,

State Road Supervisor.

Denver, Colo., December 31, 1914.

Hon. T. J. Ehrhart,  
State Highway Commissioner,  
Denver, Colorado.

Dear Sir: I beg to submit herewith report of work on the State Highways of which I had personal charge between the dates of June 20, 1913, and November 30, 1914. Also statement of other duties performed as one of your State Road Supervisors between June 20, 1913, and November 30, 1914.

On July 9, 1913, I arrived at Agate to take charge of the Anderson camp, at that time under Mr. Wyman's supervision. On July 10th, Mr. Wyman and myself looked over the road from Agate to Limon, and I decided to return over the road and put in the necessary drainage. I took charge of Anderson's road building organization on July 10, 1913, dispensed with his services on July 17th, and on July 26th returned to Agate and organized a force to complete the 8 miles of work.

By August 12, 1913, we had completed the work of repairing the 8 miles of road from Agate to the Arapahoe county line, and placed seven new culverts from 24 inches to 36 inches in diameter, and replaced 5-12 inch Ingot iron culverts, and 5-18 inch pipe 22 feet long, with larger pipes, regraded the entire road, and put in an 18 inch fill for three-fourths of a mile.

#### SUMMARY OF COST

(To this should be added the cost of the overhead charges, which in this case were small)

154' Ingot iron pipe, cost.....	\$461.92
Placing 17 culverts, labor.....	170.00
Grading and making fill.....	396.92
Total cost.....	\$1,028.84

On August 23, 1913, I commenced work finishing the road through Perry Park from Palmer Lake to Sedalia, that was constructed under the supervision of Mr. Blunt of Douglas county. This work was grader blade, with some slip and culvert work. There was about 23 miles of road that was finished at a cost of \$500.00.

Team and driver.....	\$0.50 per hour
Grader man.....	4.00 per day

The outfit consisted of 8 horses and two men on the grader, and two men and team on trap wagon, and slip scraper work. This work was completed on September 8th, 1913.

On September 15, 1913, the grading and graveling of 1.7 miles of road north of Larkspur toward Castle Rock was commenced, and was completed on October 31, 1913. The work was



COLORADO SPRINGS-DENVER ROAD, NEAR PIKEVIEW, EL PASO COUNTY—STATE PRIMARY ROAD  
NO. 3. CONCRETE GIRDER BRIDGE, CONCRETE RAIL.



done by the local people at 50c per hour for men and team, and 25c per hour for single men and \$3.00 per day for foremen. One-half of this road was surfaced with gravel, and loam mixed, which was found along the roadside.

## SUMMARY OF COST

4 Concrete culverts, 282 cu. yd. @ \$9.00 per yd.	\$ 250.40
1 Ingot iron culvert, 18" diameter	56.70
Cost of placing culvert and grading and graveling	1,187.52
	<hr/>
Total cost of 1.7 miles.	\$1,494.62
Average cost per mile.	\$79.19

Work was commenced on Acequia and Wolhurst road on November 1st, and completed on December 16, 1913. There were 1.4 miles graded, and 0.5 miles graveled.

## SUMMARY OF COST

1 Concrete stock-run	\$ 342.52
1000' vitrified pipe culverts 15" and 18"	376.50
Placing 22 culverts	132.00
Grading and graveling	980.07
	<hr/>
Total	\$1,831.09
Less 10 culverts on hand	93.75
	<hr/>
*Total cost 1.4 miles	\$1,737.34
Average cost per mile	1,240.95

On March 18, 1914, I went to Deertrail and repaired the Agate and Deertrail road, which was washed out, and placed 5 Ingot iron culverts at a cost of \$79.50. This work occupied my time from March 18th to March 25th, inclusive.

March 28th to April 2nd: Regraded Larkspur-Palmer Lake road. Six horses, two men and grader man, 9 miles of road, for \$94.05, at a cost of \$10.45. per mile.

Perry Park, regraded and repaired old road, April 3 to April 16th, inclusive, 6 days work, total \$89.75.

April 28th commenced the construction of 7.3 miles of road between Larkspur and Castle Rock; this work was completed September 8, 1914.

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\*To this total some additional expense for stock-run and overhead charges is to be added.

## SUMMARY OF COST

Surveying	\$ 63.00
7 Concrete culverts, 4 concrete stock-runs, $4\frac{1}{2} \times 6\frac{1}{2} \times 20$ , 162.024 cu. yds. @ \$9.00.	1,458.22
Reinforcement and rail.	201.51
36 Vitrified pipe culverts, $10 \times 24$ " in diameter	365.98
Placing same.	221.40
14 ft. wooden bridge.	121.34
Grading and graveling.	6,511.24
Total cost, 7.3 miles.	\$8,942.69
Average cost per mile	1,225.02

On September 8, 1914, I commenced the building of a new road between Sedalia and the north county line of Douglas county.

By November 30, we had completed 4.7 miles of road from Sedalia toward the north county line. The prices paid for teams and labor were \$4.50 per day for man and team; \$2.25 per day for single men, and \$3.50 for foreman; \$3.50 for grader man and finisher. 2.5 miles of this road was graveled.

## SUMMARY OF COST

Ingot iron culvert for Sedalia Street culverts, 12".	\$ 214.15
Placing 5 culverts of same	30.75
685' vitrified pipe 12" to 24"	301.05
Placing 21 culverts of same.	129.15
4 Fresno scrapers and fixtures.	109.76
Graveling, 1 mile 425 cu. yds. @ 44c yd.	187.00
Grading entire road and graveling $1\frac{1}{2}$ additional miles	4,322.87
Total expenditure.	\$5,294.75
Less value tools on hand.	\$ 73.19
Grading and graveling on other road.	170.75
Putting in crossing at Palmer Lake	53.00
96' of 12" Ingot iron.	70.08
95' of vitrified pipe.	52.18
Total deducted	419.20
Average cost per mile.	1,037.35
Total amount road repaired in Elbert County.	8 miles
Roads repaired in Douglas County.	32.0 miles
New roads constructed in Douglas County	15.1 miles
Other work done on Primary Roads Nos. 8 and 3 in Douglas County.	11.2 miles
Total new road completed.	26.3 miles



All roads were built 28 feet from ditch to ditch with 24 feet traveled way, and all drainage was placed to enable the use of the entire width of the road, according to the plans and specifications of the State Highway Commission.

Tools on hand belonging to the State of Colorado.

- 6 fresnos and eveners
- 8 shovels, 1 pick.
- 2 plow shares.
- 1 drag.
- 4 Ingot iron culverts.
- 1 vitrified tile culverts.

#### INSPECTION TRIPS.

On July 1, 1913, I made a trip of inspection of the Golden and Lookout Mountain road, and found the work progressing nicely. They were using compressed air drills on the heavy work, and getting fair results. We walked over the entire route to the summit of the mountain, and the location of the road, both as to the grades and scenery effects is very good.

On July 2nd, I was over the Bonlevard "F" road that was being improved, and found them working to a disadvantage on account of lack of proper tools; otherwise the work was progressing nicely, and they were making some much needed improvements.

On July 7th I was over the work in Douglas county, through Perry Park, and found Mr. Blunt using a steam tractor to pull a grader, which was impractical in such a country, as the curves and rough condition of the road made it impossible to get the engine where it was necessary, and left the road in very rough condition, and the expense of getting the coal and water for the engine, and the cost per day for the engine, made it more expensive than teams.

On August 16th, I looked over the situation, preparatory to smoothing the Perry Park road, and August 19th went to Palmer Lake and organized an outfit, and August 23rd commenced the work and completed the same on September 7th.

November 28th I inspected the Texas Creek-Cotopaxi road, and good progress was being made at that time, but the class of work was not up to the standard, and it was necessary to rebuild part of it, as the survey had not been followed as closely as it should. It was necessary to make a few changes in the grade and widen the fills, which we did with good results.

On November 29th I visited the convict camp above Parkdale, and found them doing some excellent work. The drainage was properly placed, and the general grade of the road was good.

On the same day I was over the new work being built below Florence, and found it nearing completion. This has been much more expensive than was expected, owing to the location of the bridge, which made it necessary to move a large amount of rock to get an approach to it.



February 28, 1914, I met with the members of the Town Board of Palmer Lake in regard to taking steps to get the Santa Fe Railroad Company to put in a crossing over their "Y" in Palmer Lake, as early as possible.

On February 28th the El Paso County Commissioners and myself went to Canon City by auto to meet the Fremont County Commissioners and make arrangements for the maintenance of the Colorado Springs and Canon City State Highway, and on the following day the Commissioners of both counties, and myself visited the convict camp above Parkdale, and found them doing good work.

On March 7th Mr. J. Buntin, County Surveyor and myself, went over the Cripple Creek road to look over the proposed improvements, and outline the work for the coming year, and on the following day Mr. Buntin and myself went over the new work between Texas Creek and Cotopaxi, and on to Salida, and decided on some changes, which were afterwards made.

On March 16th I was at Castle Rock, and saw the County Commissioners in regard to the maintenance of the State road through the county, and it was agreed that they would maintain it.

March 19th—Examined the flush bridges east of Deertrail, and found one of them had been washed around on the west end, and it would require a water-break to divert the water over the bridge, and that the gravel should be cleaned out under the slab, so that the water would cut the channel directly toward the bridge.

On May 11th, I was at Canon City, and attended the damage suit of Mr. Murray against Fremont County over the rights of way of the Parkdale and Texas Creek road.

On July 10th I went to Canon City and Mr. Buntin and myself went over the Canon City and Cripple Creek road that was being improved by Mr. Biddox, and we found the drainage that was being used entirely too small, and not enough turnouts, and no provisions made for drain ditches to carry the water to the culverts. A recent rain had washed away most of the work, as it consisted mostly of surfacing, and the road furnished a course for the water, and the surfacing was washed away.

On July 29, 1914, Mr. Burnett, County Commissioner of Chaffee County, and myself, made a trip over Poncha Pass, and found the road in good condition, except for the lack of drainage, and if it was properly drained, this would be a first-class road.

On the same day we went over the Monarch Pass, and considerable work had been done of a temporary nature, but the rains had washed it until little was left of the work, but where permanent work had been done, the water had done very little damage. This road could be built with reasonable expense, and make a good road. The material is good, and by changing it out of the creek bottom in places it would greatly minimize the cost of the upkeep.

On July 30th Mr. Dougherty of Buena Vista, representing the County Commissioners, and myself, went over the Trout Creek Pass road, and found it badly washed. All the bridges were washed out, and the road in an impassable condition. Mr. Capp, the Warden of the Reformatory, was working a crew of convicts on the lower end of the road, and the county was working a crew on the upper end, and every effort was being made to reopen the road.

On September 3rd and 4th Mr. W. A. Gillaspey, County Commissioner of Gunnison County, and myself made the trip from Gunnison to Montrose County line, over the Blue Mesa route, and found the road generally in very good condition, but close to the Montrose county line was a very bad mud hole, that was caused by seepage from the irrigation ditches on the Mesa above the road, which had caused a slide, and left the road in an impassable condition. We decided to have it fixed at once.

On September 13th I completed arrangements with the town Board of Palmer Lake to put in the crossing across the Santa Fe wye, and on September 26th I went to Palmer Lake with two 4-horse teams and two men, and the next day, with the assistance of the local people, we put in the crossing and opened it for travel.

On October 19th I was called to inspect the road from Coto-paxi to Texas Creek, and found some complications between the parties in charge, but the matter was arranged satisfactorily, and the work is progressing nicely, and on the following day I was over the road from Coaldale to Howard, and found the new concrete bridge across Hamilton Creek very badly constructed. It was located above the road line, and is too narrow, and the angling position makes the roadway still narrower.

On October 29th, in company with Mr. H. L. Knykendall, I visited the road building camp near Broomfield, and found some very bad road on account of the recent rains, but they were crushing rock, and surfacing it, which is very essential on that road, owing to the character of the soil. Long rainy spells would make the road almost impassable.

On November 30th I saw Dr. McDaniels about the rights of way across his place in Douglas County, and found the property belonged to his wife, who was then in Chicago, and he took the matter up with her by mail.

Respectfully submitted,

W. R. ALLRED,  
State Road Supervisor.









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